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The JOURNAL of Real Estate Management

Published Quarterly By
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National Association of Real Estate Boards

VOLUME III NUMBER 4

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The JOURNAL *of* Real Estate Management

***of the* National Association of Real Estate Boards**

HARRY GRANT ATKINSON, *Managing Editor*

C. M. JONES, *Library Editor* — H. C. WENBERG, *Assistant Editor*

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THE JOURNAL OF REAL ESTATE MANAGEMENT

22 West Monroe Street, Chicago, Illinois

EDITORIAL

WHAT CAN I GET?

THE Institute of Real Estate Management has recently enlarged its fundamental philosophy. No longer a trade association, its membership is now made up of individuals banded together to foster a profession for Property Managers.

An unprecedented number of inquiries are now being received at the Headquarters Office asking how individuals may become members of the Institute and thus earn the right to be known as Certified Property Managers. Most of these inquiries arise from a sincere desire to raise the standards of property management through selective processes.

Some, on the other hand, come from persons seeking to know "how the Institute can make me more money." We presume that these inquiries are a hang-over from the trade association days—that they are being made by men whose understanding of the present Institute's aims has been confused by self-gain.

Actually, membership in The Institute of Real Estate Management for the next two or three years is simply an opportunity for farsighted men to work hard—to give generously of time and effort—not for themselves, but for the satisfaction of having a personal part in the creation of a great new profession and securing the prestige that comes from personal identification with it.

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF MARCH 3, 1933

Of The Journal of Real Estate Management of the National Association of Real Estate Boards, published quarterly at Chicago, Illinois, for October 1, 1937.

State of Illinois } ss.
County of Cook }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Harry Grant Atkinson, who, having been duly sworn according to law, deposes and says that he is the Business Manager of The Journal of Real Estate Management and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, The Institute of Real Estate Management, 22 W. Monroe Street, Chicago, Ill.; Editor, James C. Downs, Jr., 38 S. Dearborn St., Chicago, Ill.; Managing Editor, Harry Grant Atkinson, 22 W. Monroe Street, Chicago, Ill.; Business Manager, Harry Grant Atkinson, 22 W. Monroe Street, Chicago, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)
The Institute of Real Estate Management (a non-profit organization), 22 W. Monroe Street, Chicago, Ill.; Harry A. Taylor, 520 Main Street, East Orange, New Jersey, President; J. W. Markeim, Fourth and Federal Streets, Camden, New Jersey, Vice President.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other persons, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

HARRY GRANT ATKINSON.

Sworn to and subscribed before me this 20th day of September, 1937.

MABEL L. DEYOUNG. (Notary Public)
(My commission expires August 26, 1941.)

The **JOURNAL** *of*
Real Estate Management

Volume III **February 1938** **Number 4**

One Hundred Per Cent Locations

By MARK LEVY, M.A.I.

THE subject of 100 per cent locations is one which has perhaps lost its "place in the sun" during the past seven or eight years as compared with the prominence which it enjoyed during the late twenties. In that period, as an accompaniment to the strenuous competition for 100 per cent locations among the chains, a considerable amount of discussion and writing came forth on this subject.

Various methods of determining the desirability of locations were evolved, and I dare say that since that time it has been recognized that at least some of these methods were based upon fallacious assumptions. For example, the practice of clocking the number of pedestrians passing a given location was for a time regarded as a reliable numerical standard upon which to base an estimate of the number of purchasers which might be attracted to the merchandise contemplated to be sold in that location. More recently it has been recognized that, in order to make such a pedestrian count of value to a prospective merchandising organization, it must be carefully analyzed in the light of the type of pedestrian, his or her ultimate destination, and, most important, whether the pedestrian be man or woman. Accurately compiled statistics disclose that women are the actual purchasers or the motivating force behind approximately 85 per cent of all merchandise sold at retail. This fact, in my opinion, is of primary importance to retail merchandising organizations, and its existence carries sufficient weight to vitiate any pedestrian traffic count which does not distinguish between men and women.

In recent years the parking problem has become increasingly more important and perplexing, since one of the principal duties of the family car is that of being used as a shopping aid and convenience. Parking facilities with time limit arrangements are perhaps more detrimental to retail merchandising than no parking facilities; in such cases, where a car may be parked for only a brief period of time, the driver of the car must be careful to limit her shopping time (assuming for the sake of this discussion that in most cases the shopper is a woman) so that she can get back to her car and move it before the time limit expires. Her mind cannot be completely occupied with her shopping, and it is highly probable that additional purchases might be made were she not subjected to this mental hazard. Even in the highly concentrated districts where no parking is permitted, at least some facilities will be found within a reasonable distance without time limits, and I believe that the inconvenience of parking an automobile several blocks away may,

I wish to acknowledge with sincere appreciation the generosity of Captain Henry Wolfson, Vice President of the H. L. Green Company, Inc., and Mr. Charles H. Sandford, Real Estate Manager for the W. T. Grant Company, for their permission to use herein certain of their observations in regard to this subject.—Author.

from the standpoint of the merchant, be compensated by the fact that shoppers in such instances are not disturbed mentally by the necessity of concern over parking time restrictions. It is not uncommon to find, in the larger cities at least, that merchants have standing arrangements with parking lots in their vicinity by means of which the parking charge is rebated upon presentation of a sales slip from the store—the store, of course, making reasonable compensation for this service to the parking lot operator.

Even in some of the outlying business sections of Chicago, the automobile parking problem has grown to such an extent that the above practice is employed. This gives a vague idea as to the degree to which decentralization of business has taken place in Chicago and in many of the other large cities of the country. It, perhaps, also emphasizes the necessity for a knowledge of a city's structure, including locations of all kinds as they are related to population density, income, racial composition, and transportation facilities.

Such a study, if properly and scientifically made, would bring to light within the particular city studied those sections where everyday needs are not available, thus indicating the existence of opportunities, and, in my opinion, would definitely determine the relation between traffic congestion and the decentralization of business.

WHAT IS A 100 PER CENT LOCATION?

But before we discuss the subject any further, let us find out what constitutes a 100 per cent location. I believe that the idea which formerly prevailed, namely that that location which is passed by the greatest number of pedestrians is the most desirable, has been dissipated.

A 100 per cent location or district has been expressed in various ways on various occasions as:

1. A definitely circumscribed area in a community where the women do most of the shopping.
2. The business section of a community where the greatest amount of retail trade is transacted.
3. That spot in a community where a merchant can render the greatest service and reap the greatest profit.

All of these definitions, I believe, are directly related to one another and also to the fact that women spend approximately 85 per cent of the family income. Women and retail trade are inseparable, and retail trade is the basis upon which 100 per cent districts are built.

It is a well-known fact that larger cities may contain as many so-called 100 per cent districts as there are definite groupings of concentrated population and purchasing power. However, it is also found in almost any large city that there is one particular section which is broadly and generally regarded as being the absolute 100 per cent district, which has the entire city from which to draw its trade.

RENT LEVELS

The question has been asked: "Is there any uniformity of rent levels in 100 per cent locations in various cities?" I believe that the answer to this question must definitely be in the negative. Some uniformity may exist in large metropolitan centers, but I believe that this is a matter governed by the similarity of the backgrounds of the locations rather than by any design upon the part of owners or merchants. Surely it could not be said with any degree of certainty that a 100 per cent location for a variety five-and-ten-cent store is the same in Chicago as it is in Cleveland, New York, Philadelphia, etc. because it is a 100 per cent location in any of these places. If a similarity exists in rental value, it is because the merchandising possibilities (volume of business, competition, and potential profit) are similar—and for no other reason.

SIZES OF 100 PER CENT DISTRICTS

The question as to whether 100 per cent districts in all cities are approximately the

same size has also been put to me, and it is my definite opinion that this question must also be answered in the negative. Speaking now of only that downtown 100 per cent section, I find that there is a great variance in size, even in cities of somewhat similar population. For example, in Los Angeles, California, the 100 per cent district extends a distance of approximately 2,385 front feet in three blocks on the west side of Broadway from Fourth Street to Eighth Street. In Brooklyn, New York, the 100 per cent district is located on the south side of Fulton Street from Nevins Street to Gallatin Place, about four blocks, covering approximately 1,377 front feet.

In other communities the district may cover a somewhat larger area, cross from one side of the street to the other, or extend to adjoining or intersecting streets. In Buffalo, New York, the 100 per cent district is on the west side of Main Street from Eagle Street to Chippewa Street, five blocks, a distance of approximately 1,705 front feet, and it also extends to the east side of Main Street from Eagle Street to Mohawk Street, two blocks, a distance of approximately 728 front feet. In Minneapolis, Minnesota, the 100 per cent district runs from Fourth Street to Eighth Street on the south side of Nicollet Avenue, four blocks, a distance of approximately 1,320 front feet, and also from Sixth Street to Eighth Street on the north side of Nicollet Avenue, two blocks, a distance of approximately 660 front feet. In Newark, New Jersey, the 100 per cent district is on the west side of Broad Street from Market Street to New Street (including Hahne's Department Store), five blocks, a distance of approximately 1,642 front feet, and extends to the north side of Market Street from Broad Street to Washington Street, two blocks, a distance of approximately 586 front feet. In Cincinnati, Ohio, the 100 per cent district is located on the north side of Fifth Street from Carew Place to Race Street, two blocks, a distance of approximately 576 front feet, on the south side of Fifth Street from Vine Street to Race Street, one block, a distance of approximately 400 feet, and finally on the east side of Race Street from Fourth Street to Sixth Street, two blocks. In Chicago, the 100 per cent district is on both sides of State Street, between Randolph Street and Jackson Boulevard, five blocks, a distance of 3,813 front feet.

Locations

As to the question of the relative merits of locations within an established 100 per cent district, I believe that it is generally known that there is a marked difference between various locations within the same district. It should be borne in mind that every location in a 100 per cent district is not a 100 per cent location for every type of business. A single location may be 100 per cent for a ladies' ready-to-wear store, for example, and might prove to be only 40 per cent for a men's store. All of the larger chains in every line of business have certain requirements as to location which are peculiar to their business and to the type of store which they operate. For example, in the ladies' group, it is usually found that a preference exists for a location on the shady side of the street. This preference may be laid to the fact that women like to shop leisurely and to look in store windows as they pass. In order to do this with the greatest comfort, it is necessary that they be in the shade. Men are not essentially "window lookers"—they are usually in a hurry and do not mind walking on the sunny side of the street. Actually, the average man objects to shopping on crowded streets and prefers that his stores be located away from heavy female traffic. That is why men's stores are usually found in locations which might be considered "off" for women's wear but which, for the purposes to which they are put, are undoubtedly most satisfactory. That variety stores (five-and-ten-cent) and women's wear chains usually are found in the "hot" spots of the 100 per

cent districts is not, I believe, subject to contradiction. While it is doubtless true that business districts existed in every city before the advent of the chain store, it is nevertheless true that the chains have brought about a scientific reorganization of these districts. In city after city you will find a Woolworth, Kresge, Grant, or Kress store or the like occupying the choice spot in the 100 per cent district. Close to these organizations and in the same building, if possible, will be found chain shoe stores, ready-to-wear establishments, and specialty shops catering to women—all lines that can afford to pay top rent in order to obtain peak business volume.

When a business district expands, and a great many do, this expansion usually takes place in the direction of the heaviest masses of population. This is a natural tendency, and, provided it is not too optimistic and does not locate too far away from the "hot" spot, there is a distinct advantage to a store which locates between its competitors and the population served. This advantage lies in three elements: first, that the store will get "first crack" at the purchasing traffic on its way to the other stores; second, that the business district will grow up to that location, leaving the stores currently in the prime spot somewhat at the "tail end" of things; and, third, that the rent for such a location will be less than that paid for a store in the "hot" spot.

In recent years there has grown a building practice which is unquestionably the result of the tremendous drawing power of the chains. In the city of Chicago, in several instances, large parcels of vacant land in more or less mediocre locations have been improved with one-story buildings especially adapted to and occupied entirely by chain organizations. These developments have been eminently successful, and in one particular instance, where leases were made on quite low minimum guarantees with usual percentage provisions, it was found that all of the nine chains in the development paid substantial additional rentals based upon their gross volumes of business. This development occupies over 200 feet of street frontage in an outlying business section where there are but two other stores in the block, both of these also being chains.

CLASSIFICATION OF BUSINESS SUBCENTERS

I found an excellent method of classifying business subcenters in a recent government survey, *The Location Structure of Retail Trade,* based upon a study of the city of Baltimore. In this survey, a subcenter is defined as a concentration of stores selling more than convenience goods and depending for its existence upon the community around it. The classification is made upon the basis of the variety of outlets represented and not upon the basis of the size or number of outlets, quality of merchandise sold, nor on stores having city-wide appeal. The extent to which the subcenters contain outlets representing the commodities necessary to make a community self-contained from a merchandising standpoint is the basis of the following designations:

Class A subcenter contains minimum requisites in all of nine groups of merchandise.
Class B subcenter contains minimum requisites in any seven groups of merchandise.
Class C subcenter contains minimum requisites in any six groups of merchandise.
Class D subcenter contains minimum requisites in any five groups of merchandise.

The following nine commodity groups showing the minimum kinds of stores required for classification purposes are listed in detail:

1. Food group (a sufficient variety of the following stores representing commodities necessary for the preparation of a meal):
   Candy and confectionery stores.
   Dairy products, eggs, and poultry stores (including milk dealers).
   Delicatessen stores.
   Fruit and vegetable markets.
   Grocery stores.
   Meat markets.

Bakery goods stores.
Other food stores.

2. General merchandise group (at least one store in this group):
   Department stores.
   Dry goods stores.
   General stores.
   Variety, five-and-ten-cent, and to-a-dollar stores.
3. Apparel group (a sufficient variety of the following stores which will provide necessary garments for all members of a family):
   Men's and boys' clothing and furnishings stores.
   Women's and children's ready-to-wear specialty shops.
   Family clothing stores—men's, women's, and children's.
   Millinery shops.
   Shoe stores.
   Furriers—fur shops.
   Hosiery shops and knit goods shops.
   Other apparel and accessories stores.
4. Automotive group (at least a filling station in this group):
   Motor vehicle establishments (new, trade-in, and used cars).
   Accessories, tires, and batteries shops.
   Filling stations.
   Motorcycles, bicycles, and supplies stores.
   Garages—repairs, gas, oil, etc.
   Other automotive establishments.
5. Furniture and household group (at least a furniture store in this group):
   Furniture stores.
   Floor coverings, draperies, curtains, and upholstery stores.
   China, glassware, tinware, aluminum, etc. stores.
   Household appliances stores.
   Other house furnishings and appliances stores.
6. Lumber and building group (at least a hardware store in this group):
   Lumber and building materials yards.
   Hardware stores.
   Electrical shops.
   Heating and plumbing stores.
   Paint and glass stores.
7. Restaurants and eating places group (at least one of the following outlets where a meal can be bought):
   Restaurants, cafeterias.
   Lunch rooms.
   Lunch counters, refreshment stands, box-lunch places.
   Fountains.
8. Drugs (at least one drugstore):
   Drugstores without fountain.
   Drugstores with fountain.
9. Jewelry (at least one jewelry store where minor repairs to a watch or other jewelry can be made):
   Jewelry stores, service.
   Jewelry stores, installment credit.

This method of classification is somewhat in the nature of a departure from the ordinary methods, and I believe that it should be of no little value if properly applied. It should serve, in my opinion, as an excellent basis for comparisons between outlying business sections of the same city and perhaps also might well be used for making comparisons between smaller communities. It is presented here not as an established method, but rather as one which might merit trial and investigation.

100 Per Cent Locations In Various Cities In United States and Canada

A list of 100 per cent retail locations in various cities of the United States and Canada is tabulated in the following pages of this article. This list has been compiled in part from my own information and experience, with assistance from other sources. To the best of my knowledge, it is the first effort at such a compilation, and I trust that any discrepancies will be condoned in view of the vast number of communities which are included.

Akron, Ohio: Main Street, from Mill Street to Market Street.

Albany, New York: Pearl Street, from Maiden Lane to State Street.

Albuquerque, New Mexico: West Central Avenue, from Third Street to Fifth Street.

Allentown, Pennsylvania: Hamilton Street, from Seventh Street to Eighth Street.

Altoona, Pennsylvania: Eleventh Avenue, from Thirteenth Street to Fifteenth Street.

Atlanta, Georgia: Whitehall Street, from Causeway to east of Alabama Street.

Atlantic City, New Jersey: Boardwalk, from South New York Avenue to South Carolina Avenue, also Atlantic Avenue from South Kentucky Avenue to South Carolina Avenue.

Baltimore, Maryland: Lexington Street, from Eutaw Street to Charles Street (Howard and Lexington is the best corner.), also Howard

Street from Mulberry Street to Fayette Street.

BINGHAMTON, NEW YORK: Court Street (north side), from Water Street to Chenango Street.

BIRMINGHAM, ALABAMA: Nineteenth Street, between Second Avenue and Fourth Avenue, plus the new Kress block.

BOSTON, MASSACHUSETTS: Washington Street, centering around Summer Street and Winter Street.

BRIDGEPORT, CONNECTICUT: Main Street, from Congress Street to John Street.

BROCKTON, MASSACHUSETTS: Main Street, from Crescent Street to School Street.

BROOKLYN, NEW YORK: South side of Fulton Street, between Gallatin Place and Nevins Street.

BUFFALO, NEW YORK: West side of Main Street, between Eagle Street and Chippewa Street; also east side of Main Street, from Eagle Street to Mohawk Street.

CAMBRIDGE, MASSACHUSETTS: Massachusetts Avenue to Cape Cod Avenue.

CAMDEN, NEW JERSEY: Broadway to the New Plaza along the vicinity of Federal Street and Hudson Street.

CANTON, OHIO: Market Avenue, between Second Street and Fourth Street.

CEDAR RAPIDS, IOWA: Southwest side of First Avenue, between Second Street and Third Street.

CHARLOTTE, NORTH CAROLINA: Tryon Street, from Third Street to Fifth Street.

CHATTANOOGA, TENNESSEE: Market Street, between Seventh Street and Eighth Street.

CHICAGO, ILLINOIS: State Street, between Jackson Boulevard and Randolph Street (100 per cent blocks—Monroe Street to Washington Street).

Outlying business sections—"A" districts:

Sixty-third Street and Halsted Street District.

Milwaukee Avenue and Spaulding Avenue District.

Lincoln Avenue, Ashland Avenue, and Belmont Avenue District.

Madison Street and Crawford Avenue District.

Sixty-third Street and Cottage Grove Avenue District.

Lake Street, between Marion Street and Harlem Avenue, Oak Park.

West side of Michigan Avenue, from 111th Street to 113th Street.

West side of Halsted Street, from 78th Street to 79th Street.

West side of Commercial Avenue, from 91st Street to 92nd Street.

CHICAGO HEIGHTS, ILLINOIS: West side of Otto Boulevard, between 216th Street and Illinois Street.

CINCINNATI, OHIO: Fifth Street, from Race Street to Carew Place, and Race Street, between Fourth Street and Sixth Street.

CLEVELAND, OHIO: South side of Euclid Avenue, from the Square to Ninth Street (100 per cent area—May Company and Kresge Company sites).

Outlying business section:

Euclid Avenue and 105 Street.

COLUMBIA, SOUTH CAROLINA: Main Street, from Blanding Street to Hampton Street.

COLUMBUS, OHIO: North High Street, from Lynn Street to Lafayette Street.

DANVILLE, ILLINOIS: North Vermilion Street, from Public Square to North Street.

DAYTON, OHIO: Main Street, from Third Street to Fifth Street.

DECATUR, ILLINOIS: West side of Water Street, between North Street and Prairie Street.

DENVER, COLORADO: South side of Sixteenth Street, from Curtis Street to California Street.

DES MOINES, IOWA: Walnut Street, from Sixth Street to Eighth Street.

DETROIT, MICHIGAN: Woodward Avenue, between Cadillac Square and Grand Circus Park (100 per cent—block between Grand River Street and Gratiot Avenue).

Outlying "A" districts:

Both sides of Woodward Avenue, between Milwaukee Avenue and Grand Boulevard.

North side of Grand River, from Beverly Court to Joy Road.

East side of Joseph Campau Avenue, between Holbrook and Evaline, Hamtramck.

Outlying "B" districts:

Livernois-Fenkell—both sides of Livernois Avenue between Fenkell and Keeler, with the east side of Livernois predominantly better.

Gratiot and Seven Mile Road—west side of Gratiot Avenue, 14297 to 14361.

Vernor Highway-Central—south side of West Vernor Avenue, between Central and Springwells.

East Jefferson Avenue and Lennox—south side of East Jefferson Avenue, Dickerson to Drexel, 13000 to 13128 East Jefferson Avenue.

West Fort Street at Campbell—north side of West Fort Street, Campbell Avenue to Cavalry Avenue.

DULUTH, MINNESOTA: Superior Street, between First Street and Second Street.

EAST CHICAGO, INDIANA: Chicago Avenue, from Forsythe Street to Olcott Street.

ELGIN, ILLINOIS: North Grove Avenue, between Chicago Avenue and DuPage.

ELIZABETH, NEW JERSEY: Broad Street, from West Grand Street to Caldwell Place.

ERIE, PENNSYLVANIA: West side of State Street, between Eighth Street and Tenth Street.

EVANSVILLE, INDIANA: Main Street, from N. W. Sixth Street to N. W. Fourth Street.

FALL RIVER, MASSACHUSETTS: South Main Street, from Columbia Street to Pocasset.

FINDLAY, OHIO: West side of Main Street, be-

tween Court Place and Sandusky Street.

FITCHBURG, MASSACHUSETTS: Main Street, from Oliver Street to Prichard Street.

FLINT, MICHIGAN: Saginaw Street, between Second Street and Kearsley Street.

FLUSHING, NEW YORK: Main Street, between Northern Boulevard and Thirty-Eighth Street.

FORT WAYNE, INDIANA: Calhoun Street, between Wayne Street and Jefferson Street.

GALESBURG, ILLINOIS: East Main Street, between Kellogg Street and Cherry Street.

GARDNER, MASSACHUSETTS: Parker Street, from intersection of Lynde-Vernon-Main to Graham Street, also Main Street at Pleasant.

GRAND RAPIDS, MICHIGAN: Monroe Avenue, from Ottawa Avenue to Lyon Street. (Best corner is intersection of Monroe Street and Pearl Street.)

GREENFIELD, MASSACHUSETTS: Main Street, from Niles Street to the Common.

HAMMOND, INDIANA: Hohman Avenue, between Russel Street and State Street.

HARRISBURG, PENNSYLVANIA: North side of Market Street, from Third Street to Fourth Street.

HARTFORD, CONNECTICUT: North side of Main Street, between Asylum Street and Church Street.

HOLLYWOOD, CALIFORNIA: Hollywood Boluevard, from 6300 to 6626, or Vine Street to Vista Del Mar.

HOLYOKE, MASSACHUSETTS: North side of High Street, from Dwight Street to Division Street.

HOUSTON, TEXAS: Main Street, from Prairie Avenue to Rusk Avenue.

HUTCHINSON, KANSAS: Main Street, from First Street to Second Street.

INDIANAPOLIS, INDIANA: South side of Washington Street, between Illinois Street and Pennsylvania Street.

JACKSON, MISSISSIPPI: North side of Capitol Street, between Lemar Street and Farish Street.

JERSEY CITY, NEW JERSEY: Journal Square.

JOHNSTOWN, PENNSYLVANIA: Main Street, from Clinton Street to Franklin Street.

JOLIET, ILLINOIS: West side of North Chicago Street, between Clinton Street and Van Buren Street.

KANSAS CITY, KANSAS: North side of Minnesota Avenue, from Sixth Street to Seventh Street.

KANSAS CITY, MISSOURI: Main Street, from Tenth Street to Twelfth Street, and Walnut Street, between Eleventh Street and Twelfth Street; also Eleventh Street, known as Petticoat Lane.

Outlying business districts:

Troost Avenue, between Thirty-first Street and Linwood Boulevard.

Thirty-ninth Street and Main Street to Westport Avenue.

The Country Club Plaza shopping center, bounded by Forty-sixth Street, Mill Creek Boulevard, Ward Parkway, and Pennsylvania Avenue.

KNOXVILLE, TENNESSEE: West side of Gay Street, from Commerce Avenue to Clinch Avenue.

LANSING, MICHIGAN: West side of Washington Avenue, between Michigan Avenue and Washtenaw Street.

LAWRENCE, MASSACHUSETTS: North side of Essex Street, from Appleton Street to Franklin Street. (Hampshire Street to Franklin Street is best block.)

LONG BEACH, CALIFORNIA: West side of Pine Avenue, from Third Street to Fifth Street.

LOS ANGELES, CALIFORNIA: West side of Broadway, between Fourth Street and Eighth Street, also Seventh Street, from Broadway to Flower Street.

LOUISVILLE, KENTUCKY: Fourth Street, from Chestnut Street to Walnut Street.

LOWELL, MASSACHUSETTS: Merrimack Street, from Bridge Street to Palmer Street.

LYNN, MASSACHUSETTS: Union Street, from Central Street to Silsbee Street.

MADISON, WISCONSIN: The Square. (Main Street, from Carroll Street to Pinckney Street, is best block.)

MANCHESTER, NEW HAMPSHIRE: Elm Street.

MARION, INDIANA: Washington Street, between Third Street and Fifth Street, also Public Square.

MCKEESPORT, PENNSYLVANIA: Fifth Avenue, from Market Street to the Baltimore and Ohio Railroad. (Best block is Walnut Street to Blackberry Alley.)

MERIDEN, CONNECTICUT: West Main Street, from High School Avenue, also Colony Street.

MILWAUKEE, WISCONSIN: Wisconsin Avenue, from Fourth Street to North Plankinton Avenue.

MINNEAPOLIS, MINNESOTA: Nicollet Avenue, between Fourth Street and Eighth Street on the south side; Nicollet Avenue, between Sixth Street and Eighth Street on the north side.

MOBILE, ALABAMA: Dauphin Street at St. Emanuel Street.

MODESTA, CALIFORNIA: Tenth Street, from J Street to I Street.

MONTREAL, CANADA: St. Catherine Street West, between Peel Street and University Street.

NASHVILLE, TENNESSEE: Fifth Avenue, between Union Street and Church Street.

NEWARK, NEW JERSEY: Broad Street, from New Street to Market Street, also Market Street from Broad Street to Washington Street. (Best block is Broad Street and Market Street.)

NEW BEDFORD, MASSACHUSETTS: East side of Purchase Street, from William Street to Elm Street.

NEW BRITAIN, CONNECTICUT: Main Street, from Commercial Street to Chestnut Street.

NEW HAVEN, CONNECTICUT: Chapel Street, from Church Street to State Street.

NEW ORLEANS, LOUISIANA: North side of Canal Street, from Bourbon Street to Rampart Street. (Best block is between Bourbon Street and Dauphine Street—French side.)

NEW ROCHELLE, NEW YORK: Main Street, from Church Street to Centre Avenue.

NEW YORK, NEW YORK: Thirty-fourth Street, between Broadway and Fifth Avenue. North side of Forty-second Street, between Fifth Avenue and Sixth Avenue. Fifth Avenue, Thirty-fourth Street to Fortieth Street and Forty-second Street to Fifty-ninth Street.

Outlying business sections:

181st Street and St. Nicholas Avenue.

The Concourse at Fordham Road; the east side of the Concourse for three blocks, of which two are good; on the west side of the Concourse there are two blocks that are good and two blocks that are fair.

Jamaica business district, Long Island; the north side of Jamaica Avenue, from 161st Street to 166th Street.

NIAGARA FALLS, NEW YORK: Falls Street, between Main Street and First Street.

NORFOLK, VIRGINIA: Granby Street, between College Place and City Hall Avenue.

NORTH ADAMS, MASSACHUSETTS: North side of Main Street, from Eagle Street to Holden Street.

NORTHAMPTON, MASSACHUSETTS: Main Street, from Strong Avenue to Old South Street.

OAKLAND, CALIFORNIA: Broadway, between Thirteenth Street and Sixteenth Street.

OMAHA, NEBRASKA: Sixteenth Street, between Douglas Street and Farnam Street (100 per cent block—between Douglas Street and Farnam Street and Harney Street and Howard Street).

OSHKOSH, WISCONSIN: Main Street.

OTTAWA, ONTARIO, CANADA: Sparks Street, between Elgin Street and Bank Street. (Best intersection is that of Sparks Street and O'Connor Street.)

PASADENA, CALIFORNIA: Colorado Street, from Broadway to Euclid Avenue.

PASSAIC, NEW JERSEY: Main Street, along the railroad right-of-way from Madison Avenue to Passaic Avenue.

PATERSON, NEW JERSEY: Main Street, from Broadway to Market Street.

PAWTUCKET, RHODE ISLAND: Main Street, from East Avenue to Broad Street.

PEORIA, ILLINOIS: Adams Street, between Main Street and Liberty Street; west side of Main Street, between Adams Street and Madison Street.

PHILADELPHIA, PENNSYLVANIA: Market Street, north side, between Eighth Street and Eleventh Street. Chestnut Street, south side, between Twelfth Street and Broad Street.

Outlying business sections:

Both sides of Sixty-ninth Street, between Westchester Pike and Chestnut Street, the east side being the better.

Germantown Avenue between Chelten Avenue and School Lane, the north side of the street being the better.

PHOENIX, ARIZONA: Washington Street, from First Avenue to First Street.

PITTSBURGH, PENNSYLVANIA: Fifth Avenue, from Market Street to Smithfield Street, rapidly going to Seventeenth Street; also Liberty Avenue.

PITTSFIELD, MASSACHUSETTS: North Street, from West Street to Columbus Avenue.

PORT CHESTER, NEW YORK: North Main Street, from Adee Street to Westchester Avenue.

PORTLAND, MAINE: Congress Street, from Oak Street to Center Street.

PORTLAND, OREGON: South side of Alder Street, from Tenth Street to Fourth Street.

PROVIDENCE, RHODE ISLAND: Westminster Street, from Mathewson Street to Empire Street.

RACINE, WISCONSIN: Main Street, from Fourth Street to Sixth Street. (Fourth to Fifth Street on west side is best.)

READING, PENNSYLVANIA: South side of Pennsylvania Street, between Fifth Street and Seventh Street.

RICHMOND, VIRGINIA: South side of East Broad Street, from Third Avenue to Seventh Avenue.

ROCHESTER, NEW YORK: Main Street, between Elm Street and St. Paul Street.

ROCK ISLAND, ILLINOIS: Second Avenue, from Seventeenth Street to Eighteenth Street.

SACRAMENTO, CALIFORNIA: K Street, from Ninth Street to Seventh Street.

ST. JOSEPH, MISSOURI: Felix Street, from Fifth Street to Eighth Street.

ST. LOUIS, MISSOURI: West side of Sixth Street, between St. Charles Street and Olive Street.

ST. PAUL, MINNESOTA: Seventh Street, between Cedar Street and Robert Street.

SAN ANTONIO, TEXAS: Both sides of Houston Street, between Navarro Street and Jefferson Street (really good to Alamo Street).

SAN DIEGO, CALIFORNIA: Fifth Street, between C Street and E Street.

SAN FRANCISCO, CALIFORNIA: Market Street, from Seventh Street to Fourth Street.

SANTA BARBARA, CALIFORNIA: State Street.

SCHENECTADY, NEW YORK: North side of State Street, from South Center Street to Clinton Avenue.

SCRANTON, PENNSYLVANIA: Lackawanna Avenue, from Pennsylvania Avenue to Washington Avenue.

SEATTLE, WASHINGTON: West side of Second Avenue, between University Street and Pike

Street; also Pike Street between Second Avenue and Fourth Avenue.

SOUTH MANCHESTER, CONNECTICUT: Main Street, from Birch Street to Maple Street.

SOUTH NORWALK, CONNECTICUT: Washington Street, from Water Street to Main Street.

SPOKANE, WASHINGTON: Riverside Avenue, from Post Street to Stevens Street.

SPRINGFIELD, ILLINOIS: West side of Fifth Street, from Washington Street to Adams Street.

SPRINGFIELD, MASSACHUSETTS: Main Street, from Harrison Avenue to Worthington Street.

SPRINGFIELD, OHIO: Main Street, from Limestone Street to Fisher Street.

STAMFORD, CONNECTICUT: Atlantic Street, from Worth Street to Main Street.

SYRACUSE, NEW YORK: East side of South Salina Street, from Fayette Street to Jefferson Street.

TACOMA, WASHINGTON: Broadway, from Ninth Street to Thirteenth Street.

TERRE HAUTE, INDIANA: Wabash Avenue, between Sixth Street and Seventh Street.

TOLEDO, OHIO: Summit Street, from Adams Street to Jefferson Avenue; Adams Street, from Summit Street to Superior Street.

TOPEKA, KANSAS: Kansas Avenue, from Fifth Street to Ninth Street.

TORONTO, ONTARIO, CANADA: Yonge Street, between Dundas Street West and Richmond Street East. (Best corner is the northwest corner of Queen Street and Yonge Street.)

TRENTON, NEW JERSEY: East State Street, between Montgomery Street and Warren Street.

TULSA, OKLAHOMA: Main Street, from Second Street to Sixth Street.

UTICA, NEW YORK: Genesee Street, from Old Erie Canal to Devereux Street.

VANCOUVER, BRITISH COLUMBIA, CANADA: Granville Street, from Hastings Street to Georgia Street.

WASHINGTON, D. C.: F Street, between Eleventh Street and Fifteenth Street. (Best block is Twelfth Street to Thirteenth Street—popular and high grade—and Seventh Street between D Street and K Street.)

WATERBURY, CONNECTICUT: South Main Street, From West Main Street to Grand Street.

WESTFIELD, MASSACHUSETTS: Elm Street, from Church Street to Franklin Street.

WILKES-BARRE, PENNSYLVANIA: The Square, also South Main Street.

WILMINGTON, DELAWARE: Market Street, from Second Street to Eighth Street.

WOONSOCKET, RHODE ISLAND: Main Street, from Flynn Square to Young Square.

WORCESTER, MASSACHUSETTS: West side of Main Street, from Chatham Street to Pleasant Street.

YONKERS, NEW YORK: Getty Square.

YOUNGSTOWN, OHIO: Federal Street, from Chestnut Street to Walnut Street.

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Exterior Maintenance and Repairs

By PETER MASTERSON

THE problems of exterior maintenance and repairs are of the utmost importance to the building owners and managers of today because they must have expert knowledge on the condition of their buildings and know the approximate costs to allocate to building maintenance and repairs if they are to manage their buildings intelligently in a competitive market. Buildings erected before 1920, in general, have cost the owners less to maintain than buildings erected since then, mostly because of the results developed by the psychology of "speed" and "bigness" started by wartime requirements.

HIGH-SPEED CONSTRUCTION

Architects and contractors have used their utmost ingenuity in developing speed in modern construction. Structural steel and masonry units have been cut to an irreducible minimum, and electric hoisting and rigging have made possible the speed records made in present-day construction. We have often seen an old building torn down, the foundation excavated, and a new building started on its way in a surprisingly short time. The new building develops with amazing rapidity. Before the structural steel of the top floors is in place, the mechanics begin setting the masonry units, and, shortly thereafter, electricians, plumbers, carpenters, plasterers, painters, etc. are working simultaneously and at top speed.

There have been both good and bad results caused by high-speed construction. The good effects lie in the tremendously decreased costs arising from: (1) the scaling down of the structural steel and masonry units and (2) the much shortened period of time the property is not producing rent, or, conversely, the rapidity with which the property produces income.

A specific example of this is the erection of the Merchandise Mart in Chicago. This building was turned over to the owners exactly one year ahead of predictions, benefiting the owners to the extent of an entire year's return on a huge investment. The savings developed by high-speed methods alone ran into millions of dollars.

The ill effects of high-speed construction have been: (1) poor workmanship; (2) faulty design; and (3) improper relationship of materials. These three factors have placed a serious burden of responsibility on the building owners and managers and have also added to the cost of properly maintaining a building. Under the old-time construction methods, when a building was turned over to the owners, it would require practically no exterior maintenance (excluding painting) for upwards of ten years. With present high-speed methods, however, a building requires an almost immediate checkup to determine what the costs of maintenance will be because of the three factors mentioned above. The alert building manager can reduce the burden of cost and responsibility appreciably if he is able to learn by proper analysis what weaknesses exist in his building and how those weaknesses can be economically eliminated or cared for.

EXAMPLES

Poor workmanship: Practically every large building erected in the past ten or fifteen years has had maintenance costs in stopping leaks through the masonry walls to the extent of thousands of dollars, and the costs in general have started when the building was only two years old. On the other hand, the buildings erected twenty-five to thirty years ago have seldom if ever been touched during their first fifteen or twenty years.

Faulty design: If a brittle mortar and

impervious bricks or terra cotta are used together, the mortar will tend to pull away from the brick or terra cotta because of shrinkage and will also fracture easily because of compression stresses. Once the mortar is fractured, it will admit moisture readily.

Generally, the moisture penetrates to, and saturates, the common brick backup. When freezing weather comes, the saturated bricks expand and tend to push the exterior masonry units off their bed and thus further break the mortar bond, which in turn allows easier and more complete penetration of moisture. Disintegration and deterioration of the exterior surfaces then proceed at an accelerated rate until eventually the structural steel of the lintels and the suspended steel are attacked. This is a great danger to the structural stability of the building because, should the masonry then be made watertight, the corrosion of the buried steel continues unnoticed until it will eventually give way entirely. The above is the essential cause for falling cornices, water tanks, and suspended masonry.

Improper relationship of materials: This point will be discussed in detail in another part of this article.

We see then that the maintenance of exteriors places the burden of cost and responsibility on the manager and is vitally interrelated with the main functions of management as follows:

Safeguarding the investment: Disintegration and deterioration of masonry, wood, and metal surfaces will proceed rapidly if the exterior surfaces are not properly maintained. Obsolescence of the structure, rapidly decreased rentals, and early abandonment by tenants follow if buildings are not properly maintained.

Enhancing the value: On the other hand, a well-maintained exterior will be pleasing and new in appearance and will invite the inspection of prospective tenants and give satisfaction to the actual tenants. The properly maintained building can control its rentals because it is keeping pace with newer buildings and can offer more both in appearance and service than a building which has been allowed to become run-down.

Securing the greatest possible net return: As mentioned above, a properly maintained building controls higher rentals and a better percentage of tenants. If the windows are properly weatherstripped and caulked, it will effect substantial savings in heating and in the costs of keeping the interiors clean. It will also eliminate tenants' complaints about drafts and dust. If the exterior masonry surfaces are properly maintained, a saving will result in the costs of interior decoration which sometimes are abnormally high because of damp walls and moisture. But the greatest saving will occur in the prevention of the high costs of eventual replacements of steel and masonry units.

Building goodwill for the property: Exterior painting serves the double purpose of preserving the wood and metal surfaces and of giving a clean and pleasing appearance to the building. Cleaning the exterior masonry not only gives a pleasing appearance to the building but creates goodwill among the tenants and the public. The Palmolive, La Salle-Wacker, Wrigley, Pure Oil, and Carbon & Carbide Buildings and the Merchandise Mart are among several of the most widely known buildings in Chicago largely because they are pleasing in appearance in the daytime and are well lighted at night. Other buildings that could be equally as prominent are not as favorably known because no effort is made to attract the public's attention.

Relationship of Maintenance and Repairs to Costs of Building Management

Because disintegration and deterioration proceed so rapidly and unceasingly if the exteriors are not properly maintained, it becomes the duty of the managers to repair the exteriors as the fundamental need arises. It is difficult to budget exterior repair costs because of the following reasons:

1. The work should be done as the need arises.
2. All the necessary work should be done at one time.
   A. The costs of scaffolding the building are high and not productive.
   B. The tenants will not be overly disturbed if the work is completed in one operation.
   C. It is more economical to do all the work at one time because deterioration will then be stopped entirely, whereas, if only a part of the work is done, deterioration will continue on both the work that was left undone and will spread to the work that was completed. In other words, if it is estimated that $5,000 will place the exterior in good condition for a period of ten years and the manager decides to spend $1,000 every other year for a period of ten years, at the end of that time he will have had constant dissatisfaction with his building and the ultimate costs will be closer to $10,000 or $15,000 than the original $5,000.
   D. There will be no control of costs and much money will be wasted until building managers know definitely what services they are buying and how those services are to be performed. It is practically impossible for a building manager to know accurately to what extent his building needs repair. Also, after the work has started, it is equally difficult to superintend the work, and consequently the owner is more at the mercy of the contractor here than in most other instances. Hence, confidence in a reliable contractor is necessary. It is important to note that if the work is done properly once, it is done permanently. When a manager is unfamiliar with the condition of his building, we advise consulting his architect and ordering him to draw up the specifications and to superintend the work once it is started.
   E. Many of the requests for estimates sent out by building managers are worded as follows: "Please examine the masonry of the above building with reference to the necessary tuck pointing." These requests are sent to five or more contractors, and the estimates when received by the owner or manager probably test his credulity.
      a. Last summer four contractors estimated work to be done on a building in Hammond, Indiana. The work included cleaning the masonry, the necessary tuck pointing, and the replacement of broken masonry units. The estimates were as follows:
      First contractor—$185 to do all the specified work.
      Second contractor—$275 to do all the specified work.
      Third contractor—$370 to do all the specified work, and he would take part payment in a couch from the store.
      Fourth contractor (a prominent firm)—cleaning, $185; tuck pointing, $700; taking out over 350 broken masonry units and installing new masonry units, using a pressure relieving joint so as to prevent further breakage, approximately $2,000.
      The work was done by the fourth contractor, and both the owners and architects are convinced that the building will not need attention for many years.
      b. Several years ago one of Chicago's most prominent buildings was erected, and every year since its erection an amount between $3,000 and $10,000 had been spent for tuck pointing. Several contractors had worked on the building, and apparently very little benefit had resulted. After six years of this unsatisfactory work, the owners made an investigation and called in a new contractor in competition with the contractors who had already done work on the building. The new contractor suggested making an examination of every elevation of the building from swing scaffolds in order to determine accurately what should be done. The inspection was made in conjunction with the architects, and it was found that approximately 85 per cent of the mortar joints needed replacement. The other contractors had sent in estimates ranging from $1,300 to $3,000. It was proved to the owners that it would cost over $1,000 just to scaffold the building without replacing a single mortar joint and that during the preceding six years approximately $8,000 had been spent for scaffolding and other unproductive costs without benefiting the building at all. The owners then decided to have all of the mortar joints replaced. A guarantee was given that no more work would be necessary for fifteen years and probably very little for an additional fifteen years.

c. A prominent Chicago Loop building found it necessary to replace approximately 300 to 500 broken masonry units every year from the time the building was completed. The hammering and banging of the workmen caused much annoyance to the tenants. After eight years of such replacing, a leading contractor was called in; he recommended that a pressure relieving joint be installed which would prevent the masonry from breaking in the future. The costs for this work were high but equalled the cost of replacing the broken masonry units over the eight-year period. The tenants are no longer inconvenienced, and the building does not have an annual expense of several thousands of dollars for exterior maintenance.

The above examples illustrate the fact that a true picture of the condition of the building cannot be obtained by securing estimates alone. There are several reasons why estimates vary so greatly: (1) the knowledge of the contractor estimating the work as to the cause of the trouble and the correct, permanent cure is of major importance; (2) the honesty of purpose on the part of the contractor to eliminate further trouble is of equal importance; (3) the question of profit is also a determining factor. For example: a manager receives estimates of $1,000, $2,000, and $3,000 from three contractors, all of whom are apparently going to do the same amount of work in the same way. Too frequently, the $1,000 estimate is accepted and that particular contractor makes more actual profit than the man who figured $3,000 intended to make. In this instance the building will suffer because, of necessity, the work done must have been done very poorly and incompletely, and shortly thereafter a much greater sum than $3,000 will have to be spent for maintenance and repairs.

Where terra cotta, stone, or brick units become badly cracked or distorted, the cause is seldom if ever attributable to an inherent weakness in the masonry unit itself but is generally caused by a lack of maintenance or by a super-imposed load for which there was not adequate provision.

In many instances, after the building has been erected and occupied, the owners decide to have a large sign erected and anchored into the masonry. On a recently repaired building, over sixty pieces of terra cotta were dangerously broken because, when a huge sign was erected, iron anchors were used and were not encased in a lead shell. Moisture entered around the anchors, and, after rust developed, a pressure was placed on the terra cotta that it could not withstand, although there was no inherent weakness in the terra cotta itself.

Proper installation or periodic maintenance would have prevented a costly repair bill. When large signs, awnings, etc. are to be placed on a building, the architects or the manufacturers of the masonry units should be asked for their advice on the necessary features required during the installation to protect their product from undue abuse.

The building manager should develop some sort of questionnaire, embodying the following points, to be filled in by the contractor after he has sent in his estimates: (1) What percentage of the mortar joints to be replaced does the contractor include in his estimate, and approximately how many man hours are required? (2) What percentage of the cost will be consumed in scaffolding the building and in other unproductive work? (3) Can a unit price be given for caulking, treatment of lintels, replacements of terra cotta, etc.? (4) Can a square-foot price for tuck pointing be given?

Other questions that may arise and that will give the manager a clearer picture of what he is buying should also be added. Where major jobs are involved, the architects should be consulted and should superintend the work because of their knowledge and ability to know if the work is being done properly and according to their specifications. The architect's superin-

tendent will not be under the same high-speed pressure in repairing the building as he was when the building was under construction.

THE MANAGER'S PROBLEM

We shall now attempt to show the seriousness of proper maintenance from a viewpoint of cost, necessity, and safety.

Hundreds of thousands of dollars are spent in large cities annually for the maintenance and repairs to exteriors of buildings, and a great percentage of the work done is of little or no value. The money is spent to stop leaks through the masonry, to stop disintegration of the mortar and spalling of the masonry, and to stop warping and deterioration of wood and metal surfaces. A large percentage of this money is wasted because the work is done incompletely, illogically, and poorly. A building manager may conscientiously try to maintain the exterior properly and economically and still be thwarted in his purpose by the people who are actually doing the work. Building managers who spend nothing to maintain the exterior should not be surprised if quick obsolescence sets in, but a manager who is trying to maintain his property can justly be chagrined when he finds that he paid for something he did not get.

The difficulty here arises from the loose usage by the contractor of the word "necessary" when referring to the replacement of loose, cracked, or badly disintegrated mortar joints. The able building manager should be capable of diagnosing his particular needs because of the rapidity of the damage that occurs when the exterior is neglected or improperly repaired.

We have shown some of the reasons why buildings today require more alert and intelligent maintenance than formerly. We know the need exists to keep masonry watertight in order to prevent disintegration of the mortar, saturation of the backup, leakage through the walls to the interior calcimine or paint, and severe damage to the structural steel. We know painting and caulking will prevent warping of the windows and will cut interior cleaning and heating costs. The question now is to be able to determine the actual conditions to be remedied and the approximate costs.

The following plan should be used in determining the total exterior maintenance requirements: (1) Contractors in all the trades involved should be called in, such as mason, painting, sheet metal, and roofing contractors. (2) After the contractors have submitted their estimates and recommendations, then the masonry work should be done first; the painting, second; the sheet metal work, third; and the roofing, last. On many occasions the masonry contractor is called in just after a new roof has been installed, and frequently, because of the heavy nature of his work, the roof is damaged to some extent by the tuck pointers or brick masons.

If a new roof is installed and no previous checkup has been made of the flashing, parapets, or coping, it is most likely that moisture will get under the new roof from one of the sources that was not repaired and that rapid deterioration will occur to the roof from the underneath side.

For long-lasting satisfaction and economy, a co-ordinated plan of maintenance should be pursued, and it is important to stop all sources for penetration of moisture at one time.

Repairs should start at the top—pent houses, water tanks, chimneys: As a general rule, all masonry from the roof line up requires more maintenance than the balance of the building because it is subject to the full range of freezing, thawing, and hot temperatures.

Water tanks: In the past few years several water tanks have collapsed. One gave way and plunged through several floors of an occupied building, causing a loss of life to nine persons and a costly repair bill for rebuilding the damaged areas. This unfortunate occurrence could have been prevented if the structural steel and

masonry supporting the tanks had been periodically inspected and properly maintained.

Some building managers pay special attention to painting the *exposed* steel supports for tanks and neglect entirely that part of the steel that is "buried" in the masonry. If moisture enters the masonry where the steel has its bearing, rapid corrosion results and proceeds unnoticed until a serious accident may occur. The safe practice is to remove a brick or two around the steel to determine the condition of the steel where it rests on the masonry. The same procedure is also required for the steel that supports elevators.

Chimneys: If chimneys are properly tuck pointed, they will not only give better results but cut heating costs as well.

Parapets, copings: A large percentage of all parapets are a combination of improperly related materials: (1) some parapets have face (or press) brick on the street side and common brick in the back or roof side; (2) some have press brick on the street and roof sides and have common brick in the center or core of the parapet; and (3) others have stone or terra cotta on the street side, common brick in the core, and press brick on the roof side. If there are any hairline cracks, open mortar joints, or badly disintegrated mortar joints in the street or roof sides, water will penetrate to, and saturate, the common brick core. When freezing weather comes, the saturated common brick will expand and distort the whole parapet. The trouble arises in the difference between the coefficients of expansion of the porous common brick and the impervious press brick, stone, or terra cotta. Much money could be spent in tuck pointing the parapets, but the only permanently effective procedure and the less costly procedure over a period of years is to take down the parapets to the roof line, remove all common brick, and rebuild, using press brick in relation to stone or terra cotta. If the street side is press brick and the roof side is common brick, it is a mistake to apply roofers asphalt to the common brick because this treatment will stop the wall from normal "breathing" and will shorten its life considerably. Parapets, cornices, and finials generally require more attention than the main body of the building because they are subjected to the full range of hot summer and freezing winter weather, whereas the masonry in the main body of the building is tempered to a noticeable degree by the interior temperature of the building itself.

The top joint in copings should be tuck pointed with at least one half inch of a good grade mastic.

The building superintendent should see that aerial wires are not allowed to cut through the coping joints and that nails and boards for aerials do not cut into the roof or parapets. At least once a month the building superintendent or janitor should clean out the copper gutters and downspouts. Clogged downspouts are a contributive factor in the rapid disintegration of the downspouts themselves, the roof, and the adjacent masonry.

Lintels, sills, cornices, windows: There are several ways of constructing the lintels over the windows. Two of the most used methods are as follows: (A) setting the angle iron which spans the window opening and then hanging the terra cotta, stone, etc. from the angle iron to form the lintel; (B) setting the angle iron to span the opening and then building the masonry on top of the angle iron. In the first case, the angle iron cannot be seen because it is buried in the masonry; in the second case it can be seen because it is carrying the masonry from the bottom.

It is vitally important to keep the lintels watertight because the angle iron is carrying the load of the masonry above; if the mortar joint is not watertight, moisture will penetrate to the angle iron, causing corrosion that will eventually exhaust the steel causing its accumulated load to fall. Secondly, the corrosion of the angle iron exerts a pressure on the surrounding masonry, and this is one of the principal causes of broken and distorted masonry. Since it is impossible to see the condition of steel buried in masonry, plans should be made to inspect thoroughly a typical lintel and other steel every three or four years. The inspection should be made as follows: Remove the masonry unit and examine the anchors and the angle iron; if serious corrosion is present, the masonry and the angle iron should be removed and new angle irons installed; if serious corrosion is not present, all corrosion should be removed, the iron painted, the joint primed and then caulked with a high-grade mastic. The treatment for lintels under "B" should be to remove any signs of corrosion on the top side of the angle iron, apply paint if possible, and then force mastic into the joint formed by the masonry and the angle iron.

The top flat horizontal mortar joints in sills, ledges, and cornices if cracked, open, or badly disintegrated should be cut out, the opening primed, and then filled with a good grade of mastic. After the lintels and sills are properly treated, the windows should be well caulked. This requires the removal of all the present caulking should it be found defective and then back-filling large openings with Marine Oakum, priming the joint and filling with mastic. If a good grade mastic is used on the lintel, sill, and window treatment, and the work is done properly, it will last for upwards of ten years without causing any further trouble. If poor

mastics are used, they will dry out in a short time and develop cracks which will cause the mastic to fall out in a year or two. We have mentioned "priming" the joint several times, which means applying a liquid coat, which is designed to prevent the absorption of the oils from the mastic into the masonry, and thus the "priming" adds life to the mastic.

Different types of masonry require different treatment: Terra cotta, because of its glazed finish and hard surface, requires a mortar with resiliency rather than brittleness.

Georgia Marble, manufactured stone, and the various marbles used in exterior masonry should be pointed with a mastic because it is very difficult to obtain a bond with mortars, and any vibration or compression stresses will cause the mortar to fall out of the joint entirely.

Stone has an affinity for bonding almost any type of mortar.

Where different masonry units like stone and terra cotta, terra cotta and brick, or any combination involving more than one masonry type are used, the mortar joint where the two types join should be removed and a mastic joint installed. The reason for this is that the mortar will tend to bond more to one type than another, and we frequently find mortar adhering to stone and completely free from adjoining terra cotta. The mastic will adhere equally well to various types of masonry.

Tuck pointing to be effective and permanent must include cutting out the defective mortar at least three fourths inch deep and washing the joint to remove loose particles of old mortar and to prevent too quick drying of the new mortar; and the mortar itself must be of the right proportions to insure resiliency and watertightness. Mastics to be effective must be of good quality, installed to a depth of at least one half inch and properly pressed into place. Knife-grade mastics are more permanent and satisfactory than gun-grade mastics. Knife-grade mastics should be firmly pressed into place. Contrary to popular opinion, there is no pressure exerted by the present gun-caulking methods.

Cleaning the masonry by the wrong methods: Sandblasting is condemned by the Indiana Limestone Association and the majority of architects because it removes the protective coating of silicates that develop on the surface of the stone when the stone is curing and leaves the stone in a pitted and pock-marked condition. Sandblasting also leaves a film of sand sifting through and around the building for months after the work is completed. Stone that has been sandblasted will get dirtier much more quickly than if cleaned by other methods.

The use of hydrofluoric acid added to muriatic acid has caused a tremendous amount of permanent damage to terra cotta and enamel brick exteriors. By using hydrofluoric acid, a contractor can remove the accumulated dirt and grime much more quickly and easily than if the milder muriatic is used, and, consequently, if hydrofluoric is used, the contractor can submit a lower figure for the work. The results of using powerful acids are the removal of the glaze finish of the enamel and discoloration of the terra cotta and enamel brick. If the acid is applied and not thoroughly removed with water, the acid will penetrate the mortar and kill its ability to resist penetration of moisture. A low estimate for cleaning buildings implies that strong acids are to be used and a poor job done. The unfortunate side of this picture is that one cleaning with a too strong acid removes a portion of the glaze, and from then on the building is harder to clean unless increasingly stronger acids are used. A penalty clause should be added to cleaning contracts, whereby the contractor assumes all liability for damage done to terra cotta, windows, awnings, etc. through the use of forbidden or destructive acids. The type of acid the contractor proposes using should be in the contract and all other types forbidden.

Steam cleaning is ineffective in itself to remove grime and dirt from the masonry, with the exception of certain kinds of brickwork, and generally has to be coupled with a sandblast machine to remove streaks and discoloration. In this case, the rule still applies not to have the surfaces sandblasted.

Stone or terra cotta should never be painted unless the surfaces have been ruined.

Acid color stains should not be used for brickwork unless a thorough cleaning precedes the application of the stain.

The proper methods of cleaning: Stone should be cleaned with clean, hot water and scrubbed with fibre brushes. Streaks should be removed by rubbing with an Ohio sandstone

(sandblasting, acid cleaning, or painting of cement coats should never be allowed on good stone).

Eighteen degree muriatic acid diluted with 40 per cent water should be the maximum acid strength allowed in cleaning terra cotta and enamel brick. It is equally important that all acid put on the wall be thoroughly removed with clean water.

Brickwork should be cleaned with the same solution of acid as terra cotta and enamel brick. Stiff wire brushes can be used to remove sand, grit, and dirt without injury to the brickwork. Stronger acid will remove the color, and sandblasting will take away the protective coating on the brick and will disintegrate the mortar. Applying acid color stains is generally satisfactory for only a very short time. Eventual peeling and fading make the building unsightly. This treatment should not be used unless the building is faced with poor or damaged material.

All the improper methods of cleaning are considerably less costly than the right methods, but, since great and permanent damage is done by the improper methods, they should never be used.

Use of Integrally Waterproofed Mortar

Disintegration would not occur if penetration of moisture could be entirely stopped. Many mortars are not waterproof in themselves and may absorb a small amount of moisture. When the temperature drops, the moisture in the mortar freezes and causes the mortar to crack and disintegrate. Therefore, considerable effort has been made to develop an integral admixture that will render the mortar waterproof.

Most of the current integral admixtures on the market are soapy in aspect and are designed to lubricate the mortar which will give a denser mortar; but these products that rely only on lubricating the mix are soluble in water, consequently are not waterproof in themselves, and tend to shorten the life of the mortar.

However, by analyzing the failures of many of the integral admixtures, a product has been developed that is waterproof in itself, insoluble in water four hours after it has been added to the mortar, cementitious in aspect, and performs the threefold function of: (1) assuring a monolithic bond with the old mortar and the masonry units; (2) lubricating the mix which gives a dense close-knit mortar; and (3) preventing disintegration—because it is waterproof in itself and stops penetration of moisture. The above product has been used with great success in the following instances:

Tuck pointing: (1) It bonds monolithically with the old mortar and masonry units. (2) It increases the life of the mortar and the building because it stops disintegration due to the penetration of moisture.

Grout coats: Exterior concrete and common brick can be effectively waterproofed by the application of integrally waterproofed grout coats, which adds to the appearance and the life of the building.

Sidewalks: Sidewalks will last longer and give better service if the topping has been waterproofed.

Basements: Leaks will not occur through basement walls if the concrete has been waterproofed. A basement that has been waterproofed is more sanitary and economical to maintain than a basement that has leaky walls.

New Methods for Stopping Leaks Through Masonry

Transparent waterproofings: Transparent waterproofings are mostly of a temporary nature, lasting only a year or two; and instead of being transparent, they darken the areas to which they are applied to a noticeable degree. Most of these waterproofings have a paraffin base, and the finished work leaves the building with a waxy and greasy appearance. A rule has been made that "the more transparent a waterproofing is, the less permanent and less waterproof the work will be."

Asphalt coatings plus aluminum paint: About three years ago a new treatment was tried for waterproofing exterior concrete and common brick. The treatment consisted of applying hot Trinidad asphalt in two heavy layers to the common brick and concrete and, when the asphalt had chilled, applying two coats of aluminum paint over the asphalt. The aluminum paint is to serve the double purpose of giving a more pleasing appearance to the

building than the black asphalt and also to keep the asphalt in a plastic condition because, if the asphalt is open to the weather, it has a tendency to "run" in hot weather and to become very brittle and crack in cold weather. The permanency and effectiveness of the asphalt-aluminum treatment is as yet unknown. However, from a maintenance standpoint, it is a treatment that requires new aluminum paint every other year, and we believe the eventual costs will be considerably higher and the work less satisfactory than if the masonry had been properly tuck pointed.

Iron treatments: Iron filings added to a cement grout and the mixture painted over mortar joints has been tried without attaining satisfactory results. The theory of the iron filings is that when they corrode they will expand and fill the voids in the mortar, but since the corrosion is not controllable, the filings become nothing but rust. Rust is not waterproof but attracts moisture. The life of the mortar, besides, is shortened by the addition of the iron filings. Iron waterproofing treatments below grade are also generally unsatisfactory because the theory is illogical and the application does not always stop the admission of moisture.

Painting mortar joints with alleged waterproof materials: The proper method to stop leaks through masonry walls is to cut out the cracked and badly disintegrated mortar to a depth of not less than three fourths inch (to cut deeper if necessary until sound mortar is reached) and then to fill the joints with a properly mixed and properly designed mortar. This treatment will make the walls watertight for upwards of fifteen years. A system that costs about one half as much as proper tuck pointing is the painting of the mortar joints with an alleged waterproof material. In some instances the waterproofing material is supposed to be forced into the old mortar by rotary tools. The desire to use this system is because it seems less costly, but, since the work is of a temporary nature and would require similar treatment every four or five years, the costs in the long run would be greater than tuck pointing costs and the disturbance and annoyance to tenants would be tripled.

From a cost standpoint, it is well to keep in mind that temporary treatments are much more costly in the long run and also that temporary treatments will have to be removed before permanent tuck pointing can be installed.

SPECIFICATIONS AND SUPERVISION

If there are many leaks through the masonry, or a considerable amount of work seems necessary to place the exterior in sound condition, it is advisable to consult your architect or to consult a reliable contractor and stay with him while he is inspecting the condition of the building. In order for the manager to know what he is buying, it is advisable for him to know as much as possible about the condition of the exterior and approximately how much and what type of work will be necessary to overcome the bad condition. A questionnaire will be of great assistance, and, if the manager is inquisitive, the inspection he makes with a leading contractor will give him the information he needs as to what services he is buying.

For the past several years some contractors have given a ridiculously low price for doing a certain amount of work with the intention and fervent hope that once they are on the building they will uncover much additional work that should be done; they have then made the provision that this additional work would be done "at their own price," which is ridiculously high.

In order to overcome the malpractice of "extras," it is necessary for the building manager to know exactly what work is covered by the contractor's estimate. It is a sound procedure to determine beforehand upon what basis "extra" work will be done. Some architects say that all work

done in addition to the original contract will be done upon a basis of actual cost plus 10 per cent overhead and 5 per cent profit or that no "extra" work will be allowed without new estimates being received for the additional work.

In general, the original estimate should be as all-inclusive as possible, and, should extra work become necessary, it should be given as much careful analysis as the original contract.

The lack of supervision on the manager's part is a factor in the great disparity in the original estimates. Some contractors always intend to do a thorough job whether they are watched or not, but there are other contractors who plan to do as little as possible as quickly as possible. In too many instances the latter contractors get the work, do a poor job, and then render their bill for payment. If the manager made no effort to inspect the work while it was in progress, he pays for something "sight unseen"; and, in many cases, he will pay for something he did not receive. If the work is not inspected as it progresses, it will be most difficult for the building manager to know whether he has a poor job or a good job because the poor work will "look" much like the good one when the job is completed. The value received depends on whether the mortar and caulking materials are sufficiently deep and thoroughly pressed into place. The best materials on the market will fail quickly if they are not properly installed.

Careful analysis of the condition and costs before the work starts and careful inspection while the work is in progress should be the rule of the conscientious building manager.

In order for the manager to know the reliability of the contractors figuring the work, it is good policy to check their references carefully and, if possible, to find out how long and how successful in treatment has been the work done on other buildings.

It is also important for the building manager to check the insurance policy of the contractors very carefully because if the contractor's insurance is faulty, the building will become liable for damages accruing from public liability and workmen's compensation. There are several cases before the Industrial Commission of Illinois, where contractors have submitted faulty policies to building managers, and, because of fatal accidents that occurred during the course of the work, the building owners are now being sued.

The wording of a guarantee should be carefully analyzed by the manager, and any changes or additions he thinks necessary in the wording of the contract should be made before the contract is let. A guarantee is only as good as the reliability and sincerity of the contractor. If the contractor is reliable and the work is done properly, a guarantee becomes superfluous. But, if possible, a guarantee should be made by the contractor.

Because of the apparent difficulty in inspecting the work, some "faith" in the reliability of the contractor seems necessary, but by question and analyses the manager should leave as little to "faith" as possible.

"Save the Surface and You Save All"

This is a slogan we have often heard, and it is perfectly applicable to exterior maintenance. If the exterior surfaces are properly maintained, the necessity will never arise to spend a large sum of money for replacement of steel and masonry units, and the costs of interior maintenance will also be lessened. An inspection of the building should be made and all the necessary work done properly. Maintenance costs will then practically cease to exist because, if the work is once done properly, it is done permanently. If the work is neglected, a much higher proportionate amount will be necessary eventually to place the exterior in a structurally safe condition.

When acquiring a new building or opening a new maintenance file, check the exterior conditions of the building thorough-

ly and determine through architects or contractors what the approximate costs will be to place the exterior in sound condition. If it is then found necessary to budget expenditures for exterior maintenances, repair first the cornices, ledges, overhanging steel and masonry, parapets, and all loose or broken masonry. When these are placed in sound condition, repair the balance of the exterior as the need arises.

SUMMARY

Leaks occurring through masonry walls has become a problem of increasing importance. The following letter is presented in order to give a more complete and technical source of information for the building manager:

July 27, 1937.

Associated Brick Mason Contractors
of Greater New York, Inc.,
341 Madison Avenue,
New York, N. Y.

Attention: Mr. J. A. Mulligan, President.

Gentlemen:

Your letter of July 15, directed to the Cowing Pressure Relieving Joint Company, was forwarded to me, as trustee of the company and inventor of the patents, for answer by my son, Charles, who is at present managing the Cowing business for us. We are primarily tuck pointing and waterproofing contractors, and we have been eminently successful in diagnosing the causes of leaks through masonry walls and in effecting the permanent and economical cure.

In your letter you refer to "microscopic cracks occurring, not because of mortar shrinkage alone, but mainly caused by the difference in thermal expansion between the steel structure and the brick facing." Some time ago it was decided that the Cowing Pressure Relieving Joint would not be required for brickwork because it was assumed that mortar joints in brickwork would have enough flexibility to expand and contract in somewhat similar ratio to the steel. This theory, however, would be truer where little cement was used than where a hard mortar and hard brick were used.

After examining many brick walls, we concluded that the shelf angle on which brick is laid is a particularly vulnerable point for leaks and failure of masonry.

The shelf angles vary in placement from coming flush with the face of the brick to being recesses back two inches from the face of the brick. Where the shelf angle is flush with the face of the brick, moisture has easy access both above and, particularly, below the steel itself, and, in addition, the tops of the vertical joints below the steel are frequently open. Where the shelf angles are recessed and mortar is faced over the steel, the mortar is quickly pushed out because of temperature changes in the steel. Consequently, whether the shelf angle is flush or recessed, it quickly becomes open to the effects of weathering, and, as corrosion starts, a tremendous pressure is exerted on the brickwork.

This pressure is not only sufficient to crack mortar joints but, in many instances, cracks and distorts the bricks themselves. Recently, we examined the penthouse of a building where the steel lintels had become quite badly rusted. The resulting pressure lifted upward over twenty courses of brickwork and left an open crack running through the masonry. It is our opinion that the following factors are involved in allowing moisture to penetrate brick walls:

1. Difference in thermal expansion between the steel structure and the brick facing which exerts a pressure on brickwork that fractures the mortar joints.
2. Tremendous destructive pressure caused by corrosion on shelf angles which cracks bricks and fractures mortar joints.
3. Tremendous pressure exerted because of slight tilting downward of the shelf angle when the structure settles.
4. Difference in thermal expansion between the surface concrete piers and beams and the brick facing, difficulty of bonding mortar to joint between concrete and brick caused by difference in porosity and co-efficients of expansion.
5. The absence of pressure applied to the green mortar at setting time by the brick mason.
6. The absence of proper curing conditions while mortar is attaining its initial and ultimate strength.
7. The tendency of extremely high buildings to sway slightly which causes fractures of the mortar because of a rigid surface.

Factors Nos. 1, 2, and 3 would be eliminated by the use of our patents U. S. No. 1992756 placed under the shelf angle, with both the lead and shelf angle faced with one half inch of our mastic lead-filler.

Factor No. 4 would be treated by replacing mortar with a mastic filler installed from the face to a depth of one inch, the sides of the concrete and brick forming the joint previously having been sealed with a primer. The mastic acts as an expansion joint and still adheres to two unlike surfaces.

We hold some of the fault of Factor No. 5 is a result of a high-speed construction. When, in order to hold his job, a brick mason is forced to lay a required amount of brick per day, he at times will not have enough leeway to sink his brick in a full bed of mortar and shove it tightly against the next brick, but he will be forced to just lay the brick on the bed and then "rough-over" loose mortar into the vertical joints, leaving the vertical joints only partially filled. In order to attain more speed in bricklaying and still insure a permanent, watertight job, we recommend the following procedure which has been satisfactorily tested by us.

The original brickwork should have the mortar recessed approximately three eighths inch. When the brickwork is completed, tuck pointers should fill by pressing integrally waterproofed mortar firmly into the joints. We would not hesitate to guarantee unconditionally a wall against leakage for upwards of fifteen years if the pressure relieving joint and our waterproofed tuck pointing were used. The cost for tuck pointing with our waterproofed mortar would be approximately ten cents per square foot and would give perfect satisfaction for at least ten years, or at a cost less than one cent per square foot per year. This procedure is economically sound for the following reasons:

1. The costs for raking our green mortar three eighths inch are trivial.
2. If the joints are not raked out at laying time and the wall subsequently leaks, then the cost of cutting out hard mortar would be thirty cents per square foot, plus ten cents for the actual tuck pointing.
3. Similarly, if the joints are not cut out at laying time and the walls leak, the costs for interior decorating must be added as an economic loss plus annoyance to the tenants both from the leaks and the work required to eliminate the leaks. In other words, the safe and economic procedure is to have the mason rake out the mortar three eighths inch at bricklaying time. When the brickwork is completed, the joints are then to be filled with our integrally waterproofed mortar at a cost of ten cents per square foot.

Factor No. 6 would be overcome by our practical and economical plan to cure properly mortar while it is attaining its initial and ultimate strength.

Factor No. 7 would be overcome by the use of the pressure relieving joint outlined for Factors Nos. 1, 2, and 3.

The problems of construction have been masterfully met by builders. Buildings go up much more rapidly than ever before, which gives the owner a quicker return on his investment. The size of steel and masonry units has been cut to an irreducible minimum which has lowered costs appreciably. But both of the above factors have caused the serious problems of leakage through masonry and the breakage of masonry units.

We shall send you in specification form the method of installing our lead relieving joint faced with mastic for relieving pressure and preventing the cracking of mortar joints in brickwork, also a specification for the tuck pointing.

Yours very truly,

PETER MASTERSON COMPANY

By *Peter Masterson*

Because of the size and design of present-day buildings and the speed of modern construction, the building manager is faced with more complex problems regarding exterior maintenance than ever before. It is the duty of the building manager to acquaint himself with the condition of the building exterior, and, because of the rapidity of disintegration due to weathering, he must conscientiously maintain the exterior as the need arises.

In order to know what services he is buying, he must familiarize himself as much as possible as to what is the proper procedure to be followed, what it will cost, and whether, in the long run, the proper procedure is less costly than temporary work. In the final analysis, the building manager must know what he is buying, and, before he pays the bills, he should know that he has received *full value.*

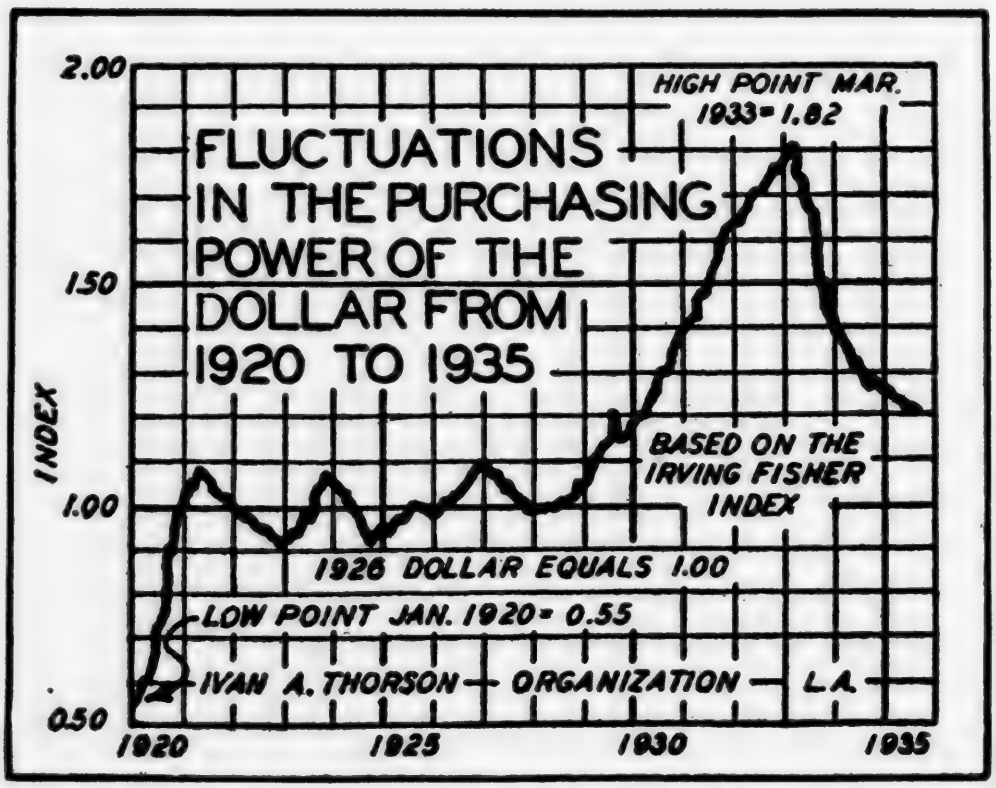
* * *

Adjusting Leases to the Changing Dollar Value

By IVAN A. THORSON, M.A.I.

THE O. Drug Company signed a twenty-year lease in January, 1920, which stipulated a monthly rental of $1,000. By 1926 it was found that the buying power of the dollar had almost doubled and that by March, 1933, at least one third more had been added to the dollar value.

The O. Drug Company went into receivership in 1933, stating that its earnings were not sufficient to pay the rent called for in the lease. The landlord argued that breaking leases was not ethical and that he was well within his rights when he refused an adjustment of the lease, which act on his part led to the receivership. He argued further that had the dollar declined in buying power, he would have been compelled to accept the $1,000 per month from the lessee, although the purchasing power of the rent money would have been less.



CUT 10. Note the violent fluctuation of the dollar from 1920 to 1933. During a span of about 12½ years the dollar varied in purchasing power from a low of $.55 to $1.82 (Fisher Index). *All the while we were on the gold standard.* This cut (10) illustrates the necessity for hedging against such fluctuations in drawing leases.

Legally, the lessor was right, but from an economic standpoint, he was all wrong. It is most probable that neither lessor nor lessee had in mind, when the lease was made, that there would be any material change in the value of the dollar during the next four years. In 1920, most people believed that we were headed for uninterrupted prosperity, and few gave much heed to the tomorrow. As will be noted by Graph No. 10, the buying power of the dollar rose almost 100 per cent from early 1920 to about the middle of 1921—an unprecedented record, we believe. It continued to fluctuate, though within comparatively narrow limits, between 1921 and 1929. Its average value for 1926 has come to be regarded as the *normal* dollar value—purely arbitrarily, it is true, but it has given us something with which to compare dollar values before and after 1926.

Regarding, then, the buying power of the dollar at the time the lease was made (1920) as the base (as having a buying power of 100 per cent or $1.00), we find that in 1926 the dollar had reached a comparative purchasing power of $1.818 and that in March, 1933, the dollar would buy over three dollars worth of goods and services—that is, it would buy more than three times as much of our everyday needs as the 1920 dollar. In March, 1933, the lessee, therefore, was forced in effect to pay as rent a sum which was over three times as valuable as the 1920 dollar and which was at least three times as hard to get. The lessee simply could not stand this greatly increased rental burden and default was his only out.

Why Not an Equitable Rent Adjustment?

During depressions or violent inflations, adjustments of leases *must be* and *are* made. However, such adjustments are hardly ever made upon an equitable basis as the tenant tries to get all the rent reduction possible, while the lessor as a rule makes the least possible concession. The result is very seldom satisfactory or equitable. Would it not be better to provide for adjustments in leases in an orderly manner, as suggested here—an adjustment which is fair to both sides? It provides for a greater number of rent dollars to be paid by the lessee when the dollar value is small and fewer dollars when the buying power is greater.

In short, it provides that the lessee shall pay as rent an amount which is at all times more or less equal in purchasing power, and surely the lessor is not unfairly treated if he receives year in and year out a sum which will buy the same amount of the necessities and luxuries of life although the number of dollars received may vary.

The Adjustment Process in Detail

Let us say that a lease calling for $1,000 per month had been made in May, 1935, this lease stipulating that an adjustment should be made in 1937 and again in 1941. Of course, adjustments may be made as often as every six months, every year, every five years, or at whatever intervals may be agreed upon by the lessor and lessee.

Let us suppose that the Fisher Index gave the dollar value in May, 1935, as $1.22 in terms of the 1926 dollar, as $1.10 in May, 1937, and as $.55 in May, 1941. To adjust the $1,000 rental stipulated in the lease to the 1937 dollar value, simply multiply the $1,000 a month rental called for in the lease by the fraction 122/110, which would give us $1,109. (See Schedule Y, Columns 5 and 6, Line e.) This would be the monthly rental to take effect in May, 1937, and to continue until the next adjustment, which would be in 1941. The adjustment for May, 1941, is made by multiplying $1,000 by 122/55, which would give us $2,218, the adjusted rental to start in May, 1941. (See Column 6, Line f, in Schedule Y.)

Should we have another depression, and the purchasing power of the dollar should rise to $2.44, our fraction would

Schedule Y

Shows Adjustments During Rising Market (Inflation)
LEASE MADE MAY, 1935
Dollar Value, $1.22—In Terms of 1926 Dollar
Rent—$1,000 per Month
Adjustments made in May of 1937 and 1941

Line	1.	2.	3.	4.	5.	6.
	Year	Purchasing Power of the Dollar in Terms of		$1,000 Rent Will Buy	Sum which buys same as 1935 Dollar	Sum Lessee Should Pay
		1926 Dollar Val.	1935 Dollar Val.			
(d)	May 1935	$1.22	$\frac{122}{122} \times \$1 = \$1.00$	$1,000	$\frac{122}{122} \times \$1 = \$1.00$	$1,000
(e)	1937	$1.10	$\frac{110}{122} \times \$1 = \$ .902$	$ 902	$\frac{122}{110} \times \$1 = \$1.109$	$1,109
(f)	1941	$ .55	$\frac{55}{122} \times \$1 = \$ .451$	$ 451	$\frac{122}{55} \times \$1 = \$2.218$	$2,218

Prepared by Ivan A. Thorson Organization — Real Estate Analysts
724 South Spring Street, Los Angeles, Calif.

Schedule X

Shows Adjustments During Falling Market (Deflation)
LEASE MADE MAY, 1935
Rent—$1,000 per Month
Adjustments made in May of 1937 and 1941

Line	1.	2.	3.	4.	5.	6.
	Year	Purchasing Power of the Dollar in Terms of		$1,000 Rent Will Buy	Sum which buys same as 1935 Dollar	Sum Lessee Should Pay
		1926 Dollar Val.	1935 Dollar Val.			
(a)	1935	$0.55	$\frac{55}{55} \times \$1 = \$1.00$	$1,000	$\frac{55}{55} \times \$1 = \$1.00$	$1,000
(b)	1937	$1.00	$\frac{100}{55} \times \$1 = \$1.818$	$1,818	$\frac{55}{100} \times \$1 = \$ .550$	$ 550
(c)	1941	$1.80	$\frac{180}{55} \times \$1 = \$3.271$	$3,271	$\frac{55}{180} \times \$1 = \$ .305$	$ 305

then be 122/244 with which to multiply the $1,000 rent. That would bring the rent down to $500.

Schedule X shows how adjustments would be made in a falling market (depression), assuming that the dollar value in May, 1935, had been $0.55 (instead of $1.22); in 1937, $1.00 (same as 1926); and in 1941 would be $1.80.

The procedure would be exactly the same as that employed in working out Schedule Y. Note the great difference, however, in the sums the lessee would have to pay in the respective Schedules.

NOTE:

Col. 2, in X and Y, shows the purchasing power of a dollar in terms of the so-called *normal* (1926) dollar.

Col. 3, in X and Y, translates the 1926 dollar value into terms of the dollar value, *as of the date when the lease was made;* that is, the May, 1935, dollar value is made the base in our calculations.

Col. 5, translates *dollar values* into *commodity prices.* It is axiomatic that the *commodity index* is the *inverse* of the dollar's purchasing power. *It is the fraction shown in this column with which the rent called for in the lease is multiplied to obtain the adjusted rent* and is the only factor which needs to concern the parties to the lease adjustment. The other items in the "grid" are given merely to show principles involved.

Average indexes published between ad-

justment periods may be employed, and only part of the difference in the dollar value may be used instead of the entire difference if agreed to by the parties concerned. Seventy-five per cent of the average change in the dollar value occurring between adjustment periods is frequently preferred on the grounds that about 25 per cent of the rentals are consumed by non-fluctuating items, such as public utilities, etc.

Adjustment Clause to be Inserted In the Lease

The clause in the lease calling for a lease adjustment, as above, may follow immediately after the agreement to pay rent and read somewhat as follows (having in mind the lease in Schedule Y):

> "It is expressly provided that the sum or sums herein agreed to be paid as rent are payable on the value of current United States money as determined by the index of the purchasing power of the dollar as published by Irving Fisher." (Of course, any other index could be used, such as that published by the Bureau of Labor Statistics, Engineering News, etc.)
>
> "AND IT IS EXPRESSLY PROVIDED THAT THE RENT HEREIN AGREED TO BE PAID SHALL, on the first day of May of each year during the continuance of this lease, be adjusted for the ensuing year by multiplying the sum herein provided as monthly rental by the current value of the dollar (which is hereby established at and stipulated to be $1.22, being the dollar value as of the date when this lease takes effect) and dividing the result thereby obtained by the index representing the purchasing power of the dollar as of the date the adjustment is made, the index used to be that published by said Irving Fisher unless some other index is mutually agreed upon by the parties to this agreement."

Why Fisher Index Is Suggested

The Irving Fisher index has been suggested for two reasons: first, its availability; it is published practically every week in the *Wall Street Journal* and in many of the weekly releases of banks and bond houses. Secondly, it has in the past been more sensitive to the changes in commodity prices in that it averages and weights only *live* commodities in making up the current price levels. The index issued by the Bureau of Labor Statistics usually lags behind some months, and there has been a tendency in making up these indexes, in the past at least, to delay the substitution of more active commodities for commodities which have become more or less dormant.

Percentages Do Not Cover The Entire Situation

While percentage leases will to a considerable extent equalize rentals with a change in the *volume* of business, such leases will not provide for the fact that during a depression the volume of goods sold may be about equal to the volume sold in normal times. On the other hand, the margins of profit during depressions are usually very thin and may be even less than the percentage of gross sales called for in the percentage lease.

Every percentage lease, therefore, should provide also for an adjustment predicated on the changing dollar value.

300 Per Cent Variation in Twelve and One Half Years

It might be worthy of note that while we have employed "present worth" and other factors containing up to nine decimal points, half of which, if chopped off, would perhaps not make 5 per cent difference in the results, we have apparently completely overlooked the changing dollar value factor which in a span of only twelve and one half years (from 1920 to 1933) varied over 300 per cent. Our failure to include in our leases the provisions allowing for such fluctuations in the dollar value has been the cause of thousands of broken leases and has forced into receivership numerous fine business concerns which would have been saved by such provisions. By the same token, landlords have had to accept greatly inadequate rentals during prosperous times, a state of affairs which could be avoided with proper lease adjustments.

* * *

The Landlord's Legal Remedies

By ANDREW C. HAMILTON

EVERY lease actually conveys from the landlord to the tenant extensive legal rights in the premises which are just as truly an "estate in real property" as are the rights of the titleholder himself. Thus, it is of importance to the landlord that he be provided with adequate methods for terminating this estate in real property, for recovering possession of the premises, and for collecting rents and damages.

RE-ENTRY AND RECOVERY OF POSSESSION BY THE LANDLORD

At the expiration of the tenant's right to occupy premises, whether by expiration of the term of the tenancy or by forfeiture of the lease, or where the tenant has disavowed his tenancy (for example, by attempting to deed title to the premises to some third party), the landlord has a legal right to re-enter the premises if he can do so without breaking the peace.

The landlord has no right of re-entry merely for the breach of a covenant in the lease by the lessee unless there is a stipulation in the lease that such a breach of a covenant shall effect a forfeiture of the lease or a termination of the tenant's right of possession, or unless a right of re-entry in such event is expressly set up by the lease.

Likewise, nonpayment of rent does not effect a forfeiture unless there is an express provision to that effect in the lease; neither does the breach of a covenant to pay taxes.

The right of re-entry can be exercised only by the person then entitled to possession. There are statutes in most states providing that the grantee or assignee of the reversion may take the same advantage of covenants and conditions in the lease as his grantor or assignor himself could and that no notice of the assignment need be given to the tenant.

The weight of authority is that, where the landlord has a right to immediate re-entry, he may take such possession by force without incurring civil liability for damages provided no more force than is reasonably necessary is employed — although, of course, the landlord may in such a case be subject to criminal liability and punishment.

In Illinois, the landlord's right is strictly limited to a "peaceable re-entry." Some states hold merely that the force used must stop short of personal violence.

The policy of giving the landlord the right to take forcible possession of the premises is not conducive to public order and is generally limited, particularly in states which provide by statute an adequate court procedure by which the landlord may quickly and effectively regain possession in an action of ejectment or in one of the various summary proceedings provided by statute and frequently referred to as "forcible entry and detainer" proceedings.

Where the right to bring a proceeding to recover possession of the premises is based upon default in payment of rent, a demand must be made for such rent before the action is brought, unless the lease expressly waives the making of such demand or a statute makes it unnecessary. If a tenant holds over after the end of the term of his lease without the consent of his landlord, no notice to quit is necessary. Neither is such a notice necessary where the right of entry has accrued under the express words of the lease or where the tenant has in some manner repudiated the title of the landlord.

As a general rule, notice to quit is adequate if given in such a way that the tenant is informed either directly or by necessary implication that he is required to quit the premises.

Summary Statutory Dispossession Proceedings

The old common-law proceeding of ejectment with its inevitable cumbersome procedure and attendant delays proved inadequate for the protection of landlords whose tenants wrongfully withheld possession of the premises. Hence, there have been developed in almost every state special statutes providing quick, summary methods of lawfully dispossessing the tenant who is wrongfully in possession. These are referred to as "landlord and tenant proceedings," "forcible entry and detainer proceedings," "unlawful detainer proceedings," or by some other similar name. All are essentially alike.

The most important fact to remember about these summary statutory dispossession proceedings is that they must always be conducted in strict accordance with the provisions of the statute. They can be used only where a relationship of landlord and tenant exists. Some statutes even provide that the summary proceeding is available to the landlord only where there is a written lease. The right of possession alone is ordinarily involved in such summary proceedings and questions of title cannot be adjudicated.

Under many of these statutes, there can be no recovery of rent or damages nor any judgment for an accounting—only a judgment for recovery of possession. In other states, similar statutes specifically permit not only recovery of possession but also recovery of delinquent rent and damages. Obviously, the latter type of statute is occasionally more satisfactory.

Such actions as a rule must be brought in the name of the party entitled to possession. By express provision of the statute in many states, the proceeding may be brought by the agent of the landlord and in the name of such agent and also by the grantee of the landlord's reversion or the assignee of the unexpired term of the lease.

In Illinois and Missouri, it has been held that the landlord, after having executed a valid lease to a third person, no longer has a right to bring such dispossession proceedings against a former tenant who wrongfully withholds possession of the premises from the new tenant. In California, Maryland, Michigan, New York, Ohio, Oregon, Rhode Island, and Washington, there are contrasting cases which hold that the existence of a valid lease to a third person does not deprive the landlord of the right to bring a summary dispossession proceeding against his former tenant who is unlawfully withholding possession.

As a rule, these statutory dispossession proceedings may be brought against the tenant and those who succeeded to the possession from or through the tenant—such as his widow or heirs or subtenants whom he has placed in possession.

The grounds for bringing such a summary dispossession proceeding under most of the statutes are sufficiently broad to include any acts by which the tenant's right of possession has become terminated.

The remedy is usually extended to cases in which the tenant withholds possession contrary to the terms of his lease, after a demand for possession, whether the tenant holds by force or not.

The proceeding cannot usually be commenced until the tenancy has been terminated or forfeited in the manner provided by the statute. It may be brought at any time thereafter.

The necessity of a demand for possession other than that required to terminate the tenancy is a matter controlled entirely by the law under which the proceeding is brought. Under many statutes it is essential that a special notice to quit or demand for possession be made before an action of unlawful detainer may be begun. In some states this notice may be waived by agreement; in others it cannot be waived. Ordinarily the notice may be given by the landlord, his agent, or his attorney. The form, method of service, and the content of no-

tices required under the statutes are usually set out in the statutes themselves—and must be strictly complied with.

Such summary dispossession proceedings are placed under the jurisdiction of some easily accessible and relatively inexpensive court.

The court procedure is defined and set out by the statutes—again with the aim of making the process inexpensive and quick.

The judgment is for possession, if the landlord proves his case (plus rent and damages if provided for by the statute), and directs that the tenant surrender possession within a stated number of days. If possession is not given, the landlord may then have a writ of possession, which officers of the court will execute by placing the tenant and his personal property out of the premises.

In some states a method is provided for the tenant to effect a redemption from such a judgment for possession.

Where dispossession proceedings are instituted maliciously and without probable cause, the tenant may recover damages, just as in other cases of malicious prosecution. It has also been held that the landlord is liable for damages where the process has been used excessively—for example, by putting a sick person out on the street in zero weather.

This very general discussion of the more common terms of the many state statutes providing for summary dispossession proceedings leads to two definite conclusions which must always be remembered:

1. It is necessary to study the statutory dispossession proceeding of your own state with scrupulous attention to every detail.
2. The statute and each of its provisions must be followed and complied with strictly and literally, word for word.

ACTIONS TO RECOVER RENT

Rent which is due and owing is no different from any other debt, and the landlord may sue the tenant, take judgment, and enforce collection of the judgment just as for any other debt due and owing. Of course, the relationship of landlord and tenant must have existed between the parties by agreement, either express or implied, but it is not necessary that the tenant shall have occupied the premises under the lease or that the landlord shall have held title to the premises. The landlord may thus sue for and recover rent without resorting to any lien or other remedy given him by the lease. Ordinarily a demand for rent when it is due is not a condition precedent to the right to sue for the rent.

A tenant has until the last minute of the day on which rent falls due to make the payment, and no law suit nor other legal proceedings to collect rent can be maintained until the following day. Most states have a statute of limitations prescribing the period of time after the right of action accrues within which such a suit for rent must be brought.

When sued for rent, a tenant may allege as a partial or total defense some claim of his own against the landlord by way of counterclaim. He may thus set up damages resulting from the landlord's breach of covenants of the lease, damages sustained because of the landlord's failure to make promised repairs, the value of improvements made by the tenant where the landlord has agreed to pay for them, and the cost of repairs made by the tenant where the landlord agreed to make repairs and failed to do so. Eviction, either actual or constructive, may, of course, also be raised as a defense to such a suit.

Rents accruing after the starting of the suit cannot as a rule be recovered. Interest on the arrears of rent may usually be recovered. The fees of the landlord's attorney may be included only when the lease thus provides. Generally, the landlord may also recover in such an action any damages he has suffered by the tenant's holding possession during the litigation, and also the reasonable expenses incurred in moving out the tenant's personal property.

Attachment to Enforce Collection of Rent

In many states, by statute, the landlord has been given the right to place an attachment on specified personal property of the tenant for the purpose of enforcing his landlord's lien or otherwise collecting his rent. The right of attachment is available only to enforce collection of rent or advances from the landlord. In some states it is available only when the rent is payable in money. Likewise, the landlord may under certain conditions levy an attachment for rent not yet due, but in that event, of course, a judgment cannot be entered for the rent until it is due—the personal property of the tenant is merely attached as security for payment of the rent when it does come due.

The statutes creating this right of attachment prescribe the grounds upon which it will become available. An attachment is usually authorized where the tenant fails to pay rent as it falls due and where the landlord reasonably believes that unless an attachment is made he will lose his rent. It is also generally authorized where the tenant without the landlord's consent removes or attempts to remove or sells his personal property, when such removal or sale endangers the collection of the rent by the landlord.

The property subject to a landlord's attachment consists of the crops grown by a tenant on the leased premises and the personal property of the tenant located on the property and used in connection therewith. The right of attachment does not extend to the other property of the tenant located elsewhere.

The landlord may even attach property in the hands of a purchaser who acquired it from the tenant with knowledge of the existence of the landlord's lien or in the hands of a mortgagee of the tenant.

An affidavit for attachment is usually essential for the issuance of the writ of attachment. The affidavit must state fully and with certainty every fact necessary to give the landlord the right of attachment under the statute. The landlord is usually required to file in court with the affidavit a bond to protect the tenant in case it proves to be a wrongful attachment. Likewise, the statutes usually provide a way for the tenant to procure a release of the property from the attachment by filing a bond to protect the landlord from loss.

A trial is subsequently had at which the rights of the parties are adjudicated. If there is judgment for the landlord, then, unless the tenant pays the judgment, the landlord may cause to be sold as much of the attached property as is necessary to satisfy his claim.

If a landlord wrongfully makes an attachment, he is liable to the tenant for damages even though he acted entirely without malice.

It is thus apparent that attachment is a remedy which can be used safely only in those emergency situations for which it has been created by the statutes. In such situations it is quite effective.

Landlord's Lien

Under the common law the landlord has no lien upon the personal property or crops of his tenant merely by reason of the relationship of landlord and tenant existing between them.

However, leases frequently contain contract provisions granting to the lessor a lien for the rent upon the personal property of the tenant on the premises or upon the crops grown on the premises.

The determination of what property is subject to such a contract lien depends upon the provisions of the lease and the intention of the parties. As between the parties to the lease, the lien covers everything it was intended to cover; as to the third persons, it covers only what is included by the express terms of the lease. The description of the personal property intended to be made subject to the lien must be definite. A valid lien may thus be granted as to property to be acquired by

the tenant later during the term of the lease. Of course, no contract lien between the lessor and lessee can be binding upon the property of third persons placed upon the premises in ignorance of such an agreement.

The landlord's right to possession of the personal property which is subject to the lien depends upon the occurrence of the default upon which the right to enforce the lien is conditioned.

A lien thus created by the lease can be enforced by the landlord or his assignee.

A lease providing for such a contract lien should be recorded in order to give constructive notice to third persons of the existence of the lien.

STATUTORY LIENS

By express statutory enactment the landlord is frequently given a lien upon the personal property or crops of his tenant to secure payment of the rent. The legal title and the right to possession of the property or crops remain in the tenant subject to being divested by proper legal proceedings.

The statutory lien for rent is regarded as impliedly forming a part of the lease, whether written or not. The recording of the lease is not a condition precedent to the creation of the landlord's statutory lien. The duration of the lien depends entirely upon the statute. Likewise, the question as to whether the lien secures other obligations than the rent and as to whether it extends to rents not yet accrued depends upon the terms of the statute.

Such a statutory lien usually covers the personal property of the tenant kept on the leased premises in the transaction of the business for which the tenancy was created. It does not generally extend to choses in action, such as notes, drafts, accounts, etc. It does not extend to the property of third persons placed upon the premises. It does apply to the proceeds of the sale of property subject to the lien but not to the proceeds of an insurance policy covering the property.

The statutory lien of the landlord is superior to and may be enforced against all but prior lien holders and bona fide purchasers without notice. It has priority over a chattel mortgage given upon the property after it was placed on the premises but not over a chattel mortgage existing upon the property at the time it was brought upon the premises.

A landlord may waive his statutory lien by express agreement or by acts indicating an intention to waive it, such as authorizing or permitting a sale of the personal property, etc. This lien can be lost only by such waiver or by a failure to enforce it at the proper time as designated by the statute.

In order to enforce his rights, the landlord must proceed to foreclose the lien or pursue such other remedy as may be provided by the statute. The statutory lien of the landlord does not entitle him to seize and sell the property without legal proceedings.

DISTRESS FOR RENT

Distress is a summary method of seizing and selling the tenant's personal property to satisfy the rent obligation which he owes. It is not regarded as a lawsuit between two persons but as a proceeding by the landlord against the tenant's property by which the landlord seizes and holds the property found on the premises until the tenant redeems the property by payment of the rent.

The right of distress may be exercised only for the collection of rent. It is a remedy that existed under the common law. In most states it is now regulated by statute; in several, it is not enforced by the courts; and in a few, it has been entirely abolished by statute.

It can be used only where the relationship of landlord and tenant exists and only where there is an express contract for a certain rent. As a general rule, a distress cannot be made before the rent is due. Taking security for the rent does

not operate as a waiver of the right to enforce payment by distress.

Under the common law a distress for rent could not be made after the termination of the relation of landlord and tenant. An early English statute, now generally in effect in this country, provides that the landlord may distrain at any time within six months after the expiration of the lease, provided the interest of the landlord and the possession of the tenant both continue to exist.

An agreement by a landlord not to distrain will be enforced. If a landlord evicts his tenant from all or part of the premises, he cannot distrain for rent.

In order to render a distress complete, there must be a seizure of the property distrained upon. A very slight act is usually adequate to constitute a seizure in the eyes of the law. Thus, if the landlord declares certain goods which he names shall not be removed, or if he goes on the premises where the tenant's goods are, makes an inventory of them, puts up a notice of distress, and serves the notice on the tenant—such acts have been held a sufficient seizure to constitute a distress.

A person taking and holding goods under a distress is bound to care for them with such reasonable care as a prudent and reasonable man would use in regard to his own property of like character. He has no right to use the property except in case of necessity and for the benefit of the owner.

Usually, the landlord is permitted to impound the goods upon the premises, and his quitting the premises thereafter without leaving anyone in possession does not necessarily constitute abandonment of the distress.

The property of a third person or a subtenant upon leased premises may be taken under a distress for rent unless it is exempt by statute.

Under the common law a landlord may levy a distress only upon property actually on the leased premises. By statute in some states a distress may be levied on the tenant's property wherever it can be found in the country. This right exists only during the continuance of the lease, and the property distrained must have been upon the leased premises at some time.

Distress applies only to tangible property capable of seizure and sale. It does not apply to choses-in-action. A distress cannot be levied on land. Fixtures are in the nature of a part of the realty and hence are not covered by a distress.

Implements of trade are exempt from distress if they are in actual use at the time or if there is sufficient other property on the premises subject to distress to satisfy the obligation. Perishable commodities are not ordinarily subject to distress; neither is property which has been put into the possession of a tenant tradesman to be worked upon by him; nor goods in the custody of a warehouseman.

As a condition precedent to the issuance of a distress warrant, it is generally required by the statute that the one seeking to levy the distress make and file with the court an affidavit as to certain facts justifying such summary procedure.

Ordinarily, any justice of the peace in the county in which the tenant resides may issue a distress warrant authorizing the summary seizure of the property. The one seeking to levy the distress must usually post a bond with the court in order to safeguard the tenant against damages arising from a wrongful or careless distress. He must also usually make an inventory of the property seized and file it with the court, serving a copy on the tenant.

The landlord has no power lawfully to break open the outer door of a building, or to unlock it with a key in his possession, or to forcibly break in a window, or open a shut window in order to make a distress, but he may for that purpose lawfully enter a building in the ordinary way of those using the building, or may climb over a fence or wall, or call in a police officer to assist him against threats or apprehension

of violence. A distress cannot lawfully be made on Sunday or between sunset and sunrise. Under the common law the landlord could himself distrain. Now by statute in many states the distress must be made by a constable or sheriff.

Where a tenant disputes the claim of his landlord, he may secure the release of the property distrained by giving a bond.

If a tenant files in court a written defense to the distress, there will be a hearing at which the court will determine the validity and amount of the rent obligation and the validity of the reasons set up in the affidavit for making the distress.

Under the common law the landlord had no right to sell property taken under a distress but was obliged to keep it as a pledge until it was redeemed by the tenant. Most states have a statute permitting the landlord to sell at public sale the property seized under the distress but only after a redemption period of several days has passed. The landlord must have the property appraised and give notice of the sale in accordance with the statute. The sale must usually be conducted by an officer of the court. The surplus proceeds of the sale, after payment of the rent and reasonable charges, are returned to the tenant by the officer.

The tenant may sue the landlord and recover damages for a wrongful or improperly conducted distress. Thus, it is highly important to employ this remedy only in strict conformity with the law as it exists in each state. Of course, the landlord's agent who authorized or conducted a wrongful or improper distress is also liable to the tenant for damages.

MECHANIC'S LIENS

In many jurisdictions there is a special statutory lien upon the improvements on real estate and upon the land on which they are situated in favor of certain designated classes of persons to secure to them compensation for the labor which they have performed in, or the material which they have furnished for, the construction, repair, or alteration of the improvements. The basis of the lien is that labor or material has gone into and added to the value of the property and has become part of the realty. It usually is available to the laborer, material man, subcontractor, or contractor.

The lien is entirely statutory—hence the statute must be strictly complied with. Every statute creating such a lien contains elaborate provisions for notice to the owner or filing of the claim in court.

From the viewpoint of the property manager, it is always important to protect the owner from such liens by procuring waivers of the lien from laborers, material men, or subcontractors, particularly when payment for improvements or repairs is made to a general contractor.

JUDGMENT LIENS

There are occasionally situations in which, because of some injury suffered through alleged negligence of the landlord or his agent, a suit to recover damages is brought by the injured person against the landlord and his agent. Such suits are not to be treated as unimportant. A judgment in such a suit becomes a lien against the real estate and remains such for many years unless paid.

In other states there are so-called "dram shop" statutes which make not only the tavern keeper but also the property manager and the landlord liable for damages resulting from the intoxicated condition of one who purchased or drank liquor in that tavern. A judgment for such damages would also become a lien on the real estate.

Hence, we note the necessity for keeping the landlord and his agent fully protected by proper liability insurance.

Many of the most effective legal remedies of the landlord are statutory. They are adequate; but they may be defeated unless used in strict compliance with the terms of the statute.

* * *

Purchasing Equipment

By KENNETH W. MOORE

IN the purchasing of equipment for a building, the purchasing agent acts as the liaison man between the vendor and the management unit. There are so many new items and inventions constantly being placed on the market in the equipment field that it would be impossible for the man who makes the leases and is responsible for the general care of the property to contact all the sources of information necessary to keep himself informed of all new developments. It is the duty of the men doing the buying, therefore, to see that the equipment purchased is that which will create the greatest possible return on the investment.

When new equipment is purchased for a building, the amount spent must be added to the principal account. Equipment cannot be considered upon the same basis as the necessary maintenance supplies. Money spent on equipment is spent to create greater revenues, and a thorough study should be made of all purchases and analyses and reports should be submitted showing exactly what additional return the property will render as a result of the installation of this additional equipment.

The purchasing agent for properties has an excellent chance to create friends both among the tenants of the properties and the vendors who contact him. He helps build up a satisfied clientele of tenants for the rental unit and makes more pleasant both his and the rental man's duties. By giving each vendor an honest and fair chance to sell his merchandise, he has an opportunity to make friends and oftentimes is in a position to secure tenants for the property in which he is interested.

Irrespective of the type of equipment to be purchased for any property, it is important that it be co-ordinated to that particular property. This is true whether we speak of units to be added or of whole installations. Many types of equipment, such as stokers, boilers, refrigeration systems, furniture, etc., are improperly designed or are cheaply installed with the view of saving a few dollars. Some examples of these are:

1. Stokers designed by the stoker manufacturer to carry half the load.
2. Boilers and specialized equipment purchased without the services of a competent engineer.
3. Refrigeration purchased upon the basis of original cost with no thought to the years of maintenance to come later.
4. New furniture of modern design placed in a room in which the remainder is old and of a period design.

BOILERS

Whenever a competent operator goes in to survey a property, he generally starts with the boiler room. More money can be made or lost in this department than in any other part of the building. It is proper, therefore, to take up first the purchase of power plant equipment.

There are many kinds and types of boilers, and before buying we must determine which type is the correct one. After that, we are in the position to investigate the various makes sold by the manufactures of this equipment. It should be immediately apparent whether a low-pressure or high-pressure boiler is required, although an error is sometimes made in recommending a high-pressure boiler so that a few minor pieces of machinery may be occasionally used on high-pressure steam. This is a fallacy. Wherever possible the working pressure of the boiler should be kept as low as possible. If the prime function is the providing of heat for a large building, there can be no excuse for high-pressure equipment.

Under certain instances, where process steam for manufacturing plants, laundries, etc. is required, a high-pressure

boiler is many times the most economical purchase to make because a great deal of process steam is of no further value in a manufacturing process after it has been lowered in pressure. In this case it becomes an ideal source for heating purposes. If this process steam represents a reasonable percentage of the total steam requirements for heating and processing in a building, high-pressure steam should certainly be considered.

When it has been decided whether to use a high- or low-pressure boiler, the style of high- or low-pressure boiler must then be determined.

For a low-pressure boiler, the type varies with the purpose. A moderate-size domestic dwelling should have a cast-iron sectional type boiler. A steel type boiler is more desirable for a large residence, an estate, or a commercial property as it provides quicker heat pickup, may be obtained in larger sizes, and is generally more efficient than the cast-iron type. In the selection of the boiler, consideration should be given to its design so that it will be the correct and most desirable unit for the burning of the fuel which is most economical. The type of firing apparatus must also be considered, and, if some special device will have to be used, it may be desirable to make slight modifications in the boiler purchased so as better to accommodate the firing apparatus.

For high-pressure boilers, consideration must be given to the pressure under which they operate in that they are designed for anything from 100 to 600 pounds per square inch. Generally, a high-pressure boiler is of special design for each installation. Consideration should, however, be given to the several standard designs: such as Scotch Marine boilers, Horizontal Return Tubular boilers, and Sterling type boilers (and the adaptation of the Sterling type boiler to provide for water-cooled walls). In large generating plants for electrical energy, the latter type of boiler is used as it can suitably burn the low grades of coal. It operates at a high pressure, is more efficient, and has expert operating engineers in attendance. It is usually one of several units, and, if the load varies, a full boiler may be put on or taken off the line without interfering with the operation of the others.

It is vitally important that the type of firing apparatus be determined before the selection of a high-pressure boiler.

Boiler accessories should be commensurate with the size and duties of the boiler. It is a waste of money to install expensive auxiliary equipment in a low-pressure heating plant which is probably hand-fired and, at the best, equipped with a domestic or semidomestic type stoker.

Although too much equipment is a waste of money, it is essential that proper and sufficient controls be installed for the operation of a low-pressure boiler. Among these should be devices for the control of the draft both at the ash pit and in the chimney. For simple installations, this is done with a syphon regulator operated by steam pressure. Many times, however, operation of the boiler is controlled by the outside temperature, the return water temperature, and sometimes by a thermostat located in a typical position in the building. These controls should be decided upon solely by their ability to lower operating and maintenance costs.

Grates: It is always well to consider, in the purchase of moderate-size boilers, the type of grates that are to be used inasmuch as there are several improved products on the market that generally are not sold as standard equipment with the boiler and are not made by boiler manufacturers.

Equipment for protection against accidents: It is important that proper protection be provided for the boiler against accidents; and this requires safety valves, tricocks, blowoffs, and other apparatus.

It is important that the water condition in the boiler remain within the proper high and low limits in order that serious damage may be avoided. This protection is

obtained for hand-fired boilers with automatic water feeders and for automatically fired equipment with low water cutoffs. These automatic devices should be of standard manufacture and as simple as possible.

Firing tools: Firing tools should be specified and only the proper tools provided for the boiler purchased. In many instances the use of the wrong tool by the janitor in handling his fire destroys the entire purpose of specially designed boilers. An instance of this is in the downdraft firebox type boiler where the downdraft grate is made up of water tubes. A large splice bar used in this fire is undesirable and only breaks up the fire beyond any reasonable need, drops coal into the ashes, and otherwise lowers the efficiency of the equipment.

For a fire tube boiler, which is used in ordinary commercial properties, the best type of flue cleaner available on the market should be obtained. This tool has been improved in the last few years, and it is now possible to secure a type that will scrape the flues down to the bare metal on every application. Clean flues reflect considerable savings, and, although this particular tool is somewhat difficult to use, it is more than justified in the savings obtained.

High-pressure boilers, handled by high-grade operating engineers, should be equipped with all of the devices available which are generally accepted as means of improving the evaporating efficiency. High-pressure boilers burn a great deal of fuel in a twenty-four-hour day, and, where an instrument designed to save one half of 1 per cent in operating costs would not be at all desirable on a low-pressure job, it could pay for itself many times over in a large plant.

It is important in large plants that the operating conditions be continually inspected and checked, and this requires instruments for the measurement of the various gases in combustion and the draft and temperatures at various points along the gas travel, as well as for analyses of the fuel used, because a failure to adjust the equipment to changes in barometric pressures or to correct the use of wrong fuel can amount to hundreds of dollars a day in large generating plants.

Safety devices both for the protection of equipment and personnel are vital in large plants and should be given every consideration.

Stores and supplies: Large mechanical plants should have a storeroom for carrying the spare parts so that immediate repairs may be made to the equipment to avoid an uneconomical shutdown.

In addition to the materials for repair, a large plant should be provided with tools with which to fabricate parts when the need for them arises.

Such plants usually have an operating personnel of sufficient ability and diversity to do the majority of their work without the aid of outside contractors, and the volume of the work in this class of maintenance is sufficient to make it economical to carry these men on the regular pay roll.

The following are a few items that should be maintained in stock at all times:

Stoker links.
Fire brick and high temperature cement.
Insulating materials and mastics for the pointing of the brickwork.
A stock of pipe, fittings, valves, and valve parts.
Boiler tubes and baffle tile.

The firing apparatus in the furnace should be designed to fit its application in the boiler in order that the maximum operating and maintenance efficiency may be obtained. It is essential that the type and kind of fuel to be used be determined prior to the purchase of the boiler.

For plants with the highest operating pressures, the present-day design indicates the use of powdered fuel equipment.

For intermittent pressures, either powdered fuel or a moving grate type of stoker is considered good practice.

For low and moderate pressure boilers,

the underfeed type of stoker has certain qualities that make it desirable as this type of plant does not have the most skilled operating engineer, and the attention given the equipment is intermittent. For this class of service, a somewhat less efficient underfeed stoker is desirable as its sensitiveness to varying conditions is considerably less than that of a powdered fuel plant.

The use of gas and oil for firing apparatus should be considered very earnestly as the combination of gas and oil in those locations where the gas company is interested in selling large quantities of gas at a wholesale rate during certain months of the year may offer a tremendous advantage to the purchaser. The use of oil or gas, however, must be decided altogether upon the prices that can be obtained in the locality, and no general rule can be established as these commodities vary as much as 100 per cent in the space of fifty miles.

Gas-fired equipment cannot normally be purchased upon the basis of economy except where the load is the equivalent of fifteen to twenty tons of coal a day.

Gas and oil both have advantages other than cheapness in their use for domestic dwellings or small buildings. Many times it is possible to dispense with an attendant if the equipment is fully automatic and provided with all the controls necessary for entire safety.

VARIOUS CLASSES OF FIRING EQUIPMENT

To clarify the above, the following discussion is given on the various classes of firing equipment.

Stokers: A domestic- and semidomestic-size stoker was introduced in about 1924 and was used to some extent up until about 1930 when it started to be generally accepted as a means of providing a convenient and economical method of burning fuel for heating buildings. It is now more and more generally used, particularly in the domestic field, and has gained almost general recognition and usage in large apartment buildings, medium-size office buildings, medium-size factories, laundries, and buildings of this class where high-pressure steam is not needed, but the fuel consumption is sufficient to require attendants, and coal becomes the logical fuel.

Stokers have improved yearly in an extraordinary manner, and there is no experimental issue involved in their usage today.

Although stokers have proved to be a splendid method of burning fuel, their application should not be made indiscriminately, and their limitations and adaptability should be recognized by the purchaser. Each particular application should be analyzed upon the basis of its own merits before a decision to make a stoker installation is concluded. A few questions that should be considered prior to making such a decision are as follows:

1. There are many settings that are not adaptable to the use of stokers. They may have too restricted a firebox to permit proper ash storage. The space limitations around a boiler may be insufficient for proper handling of a stoker. A water condition may exist that would damage any electrically operated equipment, and this water condition may develop so frequently and be so costly to eliminate that a stoker would not be a good investment. The type and cost of fuel that is available in the community should be considered. If a good Pocahontas coal is available at approximately the same cost as the lower grade of fuels, it would be difficult to justify a change from hand-firing to stoker-firing. One boiler may be much more suitably designed for hand-firing than the average, such as some of the downdraft types, and the net savings due to a stoker installation may not amortize the cost of the installation more quickly than it is necessary to write this equipment off because of depreciation.
2. The cash position of the property may be such that further obligations would cause an unhealthy financial setup even though a stoker installation would be self-liquidating.
3. Other methods of burning fuel should be considered if a stoker has certain disadvantages. A stoker requires maintenance, the handling of coal, and ashes with its accompanying dirt. Many buildings operate with an oil burner without a paid or regu-

lar janitor. This item would add a man to the pay roll and would probably offset any savings made. Some communities are in a particularly advantageous location for gas or oil, and the actual costs of operation may be less with these fuels than even with the cheapest grade of coal. An example of this is in Chicago where a very advantageous gas rate is offered for seven months of the year. Here it is possible, when the consumption is great enough, to buy gas upon the basis of as high as 52,000 B.T.U. for one penny, whereas, the best rate available on the present market in coal is some 47,000 B.T.U. for one penny. There is no question but that, in such large installations, gas can be more efficiently fired than coal, and, in addition, considerable savings are effected because no coal nor ashes have to be handled. The savings during seven months that this favorable rate is offered more than offset the cost for the other five months of the year when it would be logical to burn oil at a cost of about 40,000 B.T.U. for one penny.

In domestic dwellings, if the people are infrequently at home or incapable of shoveling coal, gas or oil is certainly the proper fuel to use.

Considerable criticism has been brought against stokers from many sources, and this criticism was justified and was created through the faults and omissions of the stoker companies in making their installations and in misapplying their equipment. This criticism, however, should not cause any purchasing agent to hesitate to take full advantage of this excellent modern accessory.

No difficulty will be experienced in the use of stoker equipment if the buyer has logically arrived at the conclusion that a stoker is a proper installation and if the stoker is then clearly specified and installed in accordance with the specification.

The following is an outline of the specification necessary to the installation of a stoker, together with some of the reasons for the specified requirements. It is assumed that a stoker is a desirable investment for the building. It is assumed that the boiler is a portable firebox type with an inverted crown sheet and that it has sufficient draft and a capacity to handle 10,000 square feet of direct radiation when hand-fired.

1. State the size of the stoker upon the basis of its ability to burn a certain number of pounds an hour of the kind of coal it is intended to use. For the above boiler, assuming that it is the proper size for the building and allowing 20 per cent increase in capacity for stoker-firing over hand-firing, this size would be capable of burning 500 pounds of coal an hour.
2. It must be definitely required that the installation conform with the local codes and ordinances as to installation arrangement, particularly as to thorough and complete combustion of the volatiles freed from the fire. In conjunction with this, the B.T.U. release value should be established at approximately 45,000 B.T.U. a cubic foot of combustion space. The city code provides for a maximum of 50,000 B.T.U. a cubic foot. It is desirable that some leeway be left for forcing the equipment if it becomes necessary. Some cities also allow the space behind the bridge wall to be used as part of the firebox cubic capacity. This has been found to be improper for small stokers, and it is very much better that the entire required capacity be within the firebox. This would, therefore, require a furnace volume of 133 cubic feet.

   To obtain this furnace volume, it may be necessary to drop the stoker below its normal setting at the bottom of the water leg. (When a stoker is installed, together with a new boiler, the boiler manufacturer will extend the water leg to provide any additional furnace volume needed.) This extension must be carefully provided for and should include the supporting of the boiler on new steel columns at least one at each corner, and the space between the stoker and the water leg should be enclosed with a No. 1 grade fire brick to a full nine-inch depth. In making this extension, some ash storage space is lost as it is necessary that the fire brick be extended up over and inside of the mud ring of the firebox in order to prevent the hot gases from burning the sheets at this spot due to poor circulation. This is typical of firebox boilers, and no manufacturer has particularly good circulation at the bottom as that is the location where the mud end and foreign substances of the boiler are generally deposited between blowdown periods.
3. Fire bricks should be of the best grade and laid in high temperature cement. They

should be square and true, permitting erection of a flat, even surface on the firebox side.

The outside surface of this combustion chamber wall should be made of common or face brick, bonded into the inner fire brick lining in order to provide the proper structural strength. This wall should be laid in a full bed of mortar with full joints so as to prevent uncontrolled air leakage.

4. If a pit becomes necessary under the boiler in order to set the stoker in a position whereby proper combustion space is available, this pit should be accurately specified. It should be required to be watertight. It should extend in front of the furnace to a sufficient point where convenience in handling the fire is possible, and it should extend back to and include the bridge wall. This pit should be made of monolithic concrete with six-inch to eight-inch walls and bottom to give proper strength and longevity. The pit should have a troweled surface, cove corners, and, if over twelve inches deep, stair steps should be provided. The floor should be pitched to a drain so that water getting into the pit, either through the washing down of the boiler, cooling the ashes, or for any other reasons, will drain out. The pit should have a small curb with a sloping outside to prevent water readily getting into the pit, and, if the pit is two feet or more in depth, it should be provided with a railing.
5. Particular consideration should be given to the method of operating and servicing the stoker in the original specification. The requirement should be clearly set up. As most portable boilers have but a single firedoor in the center for hand-firing, it is usually desirable to remove the front water leg and install a new water leg containing two firedoors, one on each side of the stoker hopper. This permits easy cleaning and observation of the fire. In the size of boiler that is being considered here, it is likely that a new water leg with two doors would be installed. However, on many smaller installations, it is more economical and sufficiently good design to extend the stoker worm so that a six- or seven-foot clearance is provided between the hopper and the boiler front for handling the fire.

   In many instances the coal bin is in such a location that the worm may be extended to a hopper within the coalbin. If this is the case, considerable convenience in operation will result. The purchaser should, however, require that the manufacturer install the motor and fan equipment outside of the coalbin.
6. The stoker should be designed with not less than three operating speeds to permit adaptability to the load requirements. This is desirable because the most economy is obtained when the stoker is in continuous operation.

   The stoker should have provision for protecting equipment in case a spike or nail or other substance gets into the worm. This is usually accomplished with a shearing pin, although there are other acceptable arrangements.
7. The air should be very carefully controlled in the operation of a stoker, and, for the size of stoker specified above, it is desirable that automatic banking dampers and draft controls be provided because of the quantities of coal that can be consumed in the off-operating periods with a very low CO_2.

   An automatic banking damper gradually closes off the air inlet supply when the stoker goes out of operation. This prevents the stack from directing air through the fuel bed and consuming fuel when it is not needed. This filtration of air through the fuel bed burns the fuel in the most uneconomical way possible. Although the quantities consumed in this way do not approach those consumed in normal operation, the amounts are surprisingly large and represent a waste.

   A banking damper is usually installed in conjunction with an additional draft control in the breeching. This draft control is designed to maintain a constant static draft head in the combustion space. This is not the most effective class of control as it really does not regulate the flow of air through the combustion space, and excessive air may be obtained, but it is the most practicable for this particular installation from an original cost and maintenance point of view.

   Means should be provided to adjust the flow of air through the fuel bed in accordance with the resistance incurred. This is needed because the fuel bed of necessity must have varying thicknesses between the cleaning period and the time just before cleaning is necessary. This varying fuel bed allows varying quantities of air to flow through, although the rate of combustion may be approximately the same. Several of the stoker manufacturers have devices to regulate the flow of air as standard equipment or as an extra, and they should always be included in the purchase.
8. Controls should always be very carefully considered. The most simple type of control is one that starts and stops the stoker in accordance with the pressure developed by

the boiler. For safety, a low water cutoff should always be provided. It is desirable, if possible, to augment this simple control with others of a more refined and comprehensive function, such as are noted below:

A. For hot water in the off-heating periods, when steam or a submerged coil is used for the heating of water, it is very desirable that an aquastat be installed to start and stop the stoker in accordance with the hot water demands. In the use of a submerged heater, it is very advantageous to use a control for the stoker which operates in accordance with the boiler water temperature. Submerged heaters generally can provide sufficient hot water for any normal building with boiler water at considerably below boiling point. It has been found that boiler water at 180 to 185 degrees is sufficient. An aquastat set to retain this temperature will effect considerable economy as the furnace temperatures will be lowered. It is, of course, proper that the aquastat be connected in series with the pressure switch and that the pressure switch serve as a limit switch for the stoker.

B. Many classes of buildings are accepting and installing types of temperature control in order to make available to the renters a uniform amount of heat—and this amount regulated in accordance with the demands. For this reason, the return temperatures many times are used to shut off the stoker regardless of the pressurestat calling for steam because, if the returns are heated to a point found to be sufficient to indicate that the radiators in the building are warm, there is no reason for additional steam pressure.

C. Buildings equipped with vacuum pumps often operate on a fixed differential, the point of operation being regulated by the outside temperatures. In this way auxiliary devices which interpret the building's needs control the stoker rather than just the pressurestat.

In the purchasing of a stoker, all of the foregoing should be given careful consideration and very definite specifications should be written on which the bids may be obtained. Consideration should also be given to the standing of the various stoker companies in the community and their ability to render service after the equipment is used. Buyers not familiar with mechanical fuel-burning equipment should obtain competent engineering help on an installation of anything as expensive as a stoker. They will then be in a position to work out their own problems rather than depend upon the information received from salesmen who are interested in selling their own particular stoker.

Oil burners: This type of equipment has a very definite field of application for the providing of heat, but great care should be exercised in its selection to see that it is able to perform properly and economically the function intended.

For domestic and semidomestic jobs, it is usually better to buy a burner using the lighter grade fuel oils because this type of equipment cannot only be made completely automatic but requires very little maintenance as the oil is usually of uniform quality and very easily burned. It is important that the domestic plants be as free of maintenance as possible in that service is sometimes very difficult to obtain and great inconvenience as well as danger may be the result of an oil burner shut down for any considerable length of time.

For larger buildings, depending upon the size, the grades of oil will run from No. 5 to No. 6 where full automatic equipment can be provided and an attendant visits and inspects the operation of the burner from time to time during the day.

For very large buildings, it is best to have a mechanical type of oil burner manually controlled with hand adjustments for primary and secondary air as well as for the oil and to burn the heaviest grade of fuel available on the market, commonly known as Bunker C oil.

This equipment requires a great deal of supervision by an attendant. It burns the most economical fuel, costing about one half of the No. 1 or No. 2 grades and at the same time providing about 30 per cent more B.T.U. per unit.

This latter type of oil burner works in

very well with the combination oil and gas fired plant. It is somewhat more expensive than coal in fuel cost.

Oil burner accessories must be selected with care so that there will be no question of their performing the intended work in an exact and faithful manner. Some of the accessories and items to be considered in the purchase of oil burning equipment are listed below.

Electrical controls should include all of the items necessary for the purpose. This varies according to whether the equipment is fully automatic or manually controlled. In either case certain controls are essential for safety, such as the stack switch, fuel cutoff in case of low water condition, and overload and low voltage protection.

For heavy grade oils and for installations with holdover tanks, circulating pumps are needed. For heavy oils, the circulating pump should be arranged to run continuously, whether the oil burner is in operation or not, providing oil to the burner with a predetermined pressure at all times; if the oil is not used by the burner, it is by-passed and returned to the tank. This serves the special purpose of continually circulating oil in the tank and in that way keeps the oil fluid. This is quite important in that Bunker C oil will become solid at 80 degrees or below. These pumps should be equipped with gauges so that their operation may be observed. Storage tanks and connected piping should be specified exactly, and the tank should be set in a safe way. It is best to put the storage tanks inside of buildings in dry locations so that corrosion does not attack them from the outside, thereby forcing early replacement. If the tanks are set inside, they should be surrounded by a thirteen-inch brick wall and then buried in sand for safety.

Oil gauges to show the amount of oil in the tank and oil meters to show the quantity of oil consumed are very desirable accessories and help the engineer in checking the operation of the plant.

For heavy oils, preheaters must be provided in order to keep the oil in a fluid state where it may be pumped through pipes and properly burned. Oil is preheated with boiler water or steam, and, generally, it is better policy to circulate boiler water through the preheater to provide an automatic temperature control valve to maintain the oil at a definite predetermined temperature. Preheaters are usually of an accepted shell and tube design.

In addition to the ordinary controls in the operation of the boiler for heating or other purposes, it is desirable that, where the complete automatic control is available, it be extended to provide control of the domestic hot water supply.

In the burning of fuel, the combustion space must be designed to suit the kind of equipment installed and the grade of oil burned. Very able engineering service should be provided to see that this combustion space is arranged for the most economical over-all operation.

Gas burners: There are two groups of gas burners; one group is quite generally used for domestic and semidomestic heating and the other, for large industrial plants.

For large industrial plants, engineering service is vital, and the installation is usually made where the gas company is interested in the disposal of large quantities of gas during the off-heating season in order to make use of their pipe lines and to establish a reasonable uniform load throughout the year. This becomes true because gas is generally used for domestic heating purposes rather than for industrial purposes, and, of course, the domestic burner does not operate during the summer.

The accessories for gas burning are approximately the same as those for oil burning. The principal thing is to accomplish the proper entraining of air with gas and the regulation of secondary air.

For domestic purposes, the boiler should be designed and purchased exclu-

sively for the use of gas. It has been quite definitely proved that the adaptation of a coal burning boiler for the use of gas is an uneconomical investment.

Auxiliary equipment: In addition to boilers, stokers, and other firing apparatus in buildings, there is the auxiliary equipment to complete the operation of the above items. All of these should be given very careful attention, some primarily for the purpose of standardization and some because of the special function they are to perform. These are briefly dealt with hereinafter.

Water heaters for domestic purposes or as auxiliary equipment should be very carefully selected and should be designed for the particular purpose they are to perform.

For domestic water, a U-tube type storage or instantaneous heater is used where high-pressure equipment is installed. These heaters are provided with automatic control devices so that the temperature of the water does not fluctuate more than about five degrees.

For low-pressure heating plants in intermediate-size buildings, a submerged hot water heater is generally the most economical in that the heat is provided directly from the boiler water. These, if carefully designed, are very economical in operation and may be provided with temperature control devices to govern the water temperatures within limits of five degrees.

For domestic dwellings, a separate automatic or manually operated gas or coal heater is the most generally used, although the hot water for winter uses may be provided through an auxiliary connection to the boiler.

Plumbing Fixtures

Plumbing fixtures should be selected, first, as to class and style to fit the needs of the building in which they are to be installed and, second, to provide the minimum number of makes and styles so that repairs and maintenance will cost the least amount possible. Some points in the selection of fixtures are considered herein.

The color of the fixtures should not be disregarded as the process used by the fixture manufacturers has been improved to a point where color can be obtained with a reasonable degree of uniformity, and there is no question but what colored fixtures in domestic dwellings are becoming more and more desirable because they aid in the establishment and maintenance of color schemes in kitchens and bathrooms.

Water closets may be the wash-down type, syphon jet type, or flush valve operated with a high or low tank or wall-hung. For large buildings with a minimum of ten to fifteen pounds of pressure at all openings, the flush valve is the best device to use. Where possible, it is desirable to use wall-hung closets so that the washing of the floors is easier. Where only low and varying pressures are available, the tank type closet should be used.

Lavatories may be the peg type, wall-hung type, or the pedestal type. For factories the wall-hung type with an additional leg is most desirable. For domestic dwellings and apartments, a pedestal type usually is selected.

Tubs are provided in many convenient styles, and the use of the tub has been changed considerably with the introduction of the shower. The tendency seems toward a square type of tub which is designed in such a manner that it is convenient to sit in the corner. This is very desirable for homes where there are children, and, because of its square design, it is most adaptable to the addition of a shower.

The type of sink for the kitchen should be chosen to harmonize with the rest of the kitchen fixtures. It is one of the most important items in a kitchen, and great care must be used to provide the very best that can be obtained.

Laundry tubs in the past have all been of a soapstone material, but the tendency today is to use an enameled iron tub which is much cleaner in appearance and cer-

tainly much more desirable than those used in the past.

Plumbing work must be in accordance with the city codes and of the latest design of approved materials. Fortunately, this is more carefully scrutinized by the health officials of the various governing bodies than any other class of maintenance.

For clarity, plumbing is to be considered to include that material, piping, and equipment which handles, conveys, or uses water, storm and sanitary sewage, and the air relief piping for these systems.

The piping in a plumbing system should be selected in accordance with the particular function it is to perform, and the plumbing system selected for the building is likely to have all of the standard types of pipe on the market, a few of which are illustrated below:

> For soil stacks and vent pipes—screwed or caulked cast-iron piping; for water piping—galvanized-steel, wrought-iron, or copper piping; for downspouts in heated spaces—galvanized-steel or wrought-iron piping; for downspouts exposed to freezing—a corrugated type of piping, usually of copper or galvanized iron; for underground sewers—open and broken jointed tile, either glazed or unglazed, depending upon the purpose, and concrete or cast iron where their particular qualities lend themselves more advantageously to the service they are to perform.

The catch basins are an integral part of any drainage system and are primarily for the use the name denotes, namely, to intercept solid material, such as stones, dirt, grease, etc., which would be likely to stop the main sewers. They provide a clean-out place from which point the sewer may be rodded in any direction, and they also serve as a gathering receptacle where many lines may be brought together with a single outlet. They are generally constructed of brick for outdoor use and of cast iron or brick for indoor use.

Valves for piping must be determined altogether on the premise of what work they are to do, that is, if a full flow is necessary and there is no restriction to this full flow, it is necessary that a gate valve be used, the sole purpose of which is to close off, occasionally, the section of piping it controls. If throttling is necessary, a globe valve should be used, and, if it is necessary to prevent a reverse flow, check valves are selected. Generally speaking, valves two and one half inches and under are of brass as it is a more desirable material than iron, and in these sizes it is not a great deal more expensive. It is wise to select the best grade of valve obtainable on the market, and, when this grade is once selected, it should be considered standard for the building.

WATER TANKS

Water tanks of both gravity and cushion types are used for many purposes. Where the water is insufficient to reach the top story of the building, it is desirable to install a tank in a penthouse, which stores water for the building and permits its continuous use without interruption. In lieu of placing the tank on the roof, which sometimes involves structural difficulties, a cushion tank is used in the basement into which water from the source is supplied against an air cushion. The water is supplied in accordance with the pressures in the tank, and the pressure is adjusted to permit the tank to remain between one half and one third full of water, and this being always under pressure makes water available to any of the openings in the building.

Air compressors are necessary for a cushion tank operation in that the air must be forced into the tank against a considerable head pressure, and, as more water is continually being brought into the tank, part of the air is absorbed in the water. This results in the absorption of a more or less large amount of air which must be made up by the compressor.

In the selection of tanks and air compressors, care must be exercised to buy equipment suitable for the needs. A cushion tank generally must be of steel construction designed according to the A.S.M.E. code for the working pressures to which it is subjected. Gravity tanks, if

made of steel, must be arranged so that they can be painted on all sides to avoid early replacement. Gravity tanks, if they are wood, should hold a high water line to prevent opening up of the seams, and they should be exposed to complete circulation of air around the outside so that rot does not occur.

With any such water systems, the proper gauges, relief valves, overflow lines, and signal systems are necessary. This is illustrated by the fact that, if there is a gravity tank on the roof that is supposed to maintain a certain level of water, there must be some electric float control that starts and stops the pump at high and low level, and there must be a relief in case the pump fails to stop when the high level is reached. This relief generally is an overflow line through the roof. Another example would be a relief valve on the cushion tank as it is possible that an air compressor or a pump may develop a working pressure higher than that which the tank can safely withstand. In that case, a relief valve will provide safety.

Buildings which have usable space below the storm and sanitary sewage lines must have some means of collecting this waste material in the low levels and discharging it into the city sewer. This is accomplished by the use of ejectors, and they may be of the Shone air-operated type or an open or closed bilge type.

The Shone ejector is most desirable where sanitary sewage must be removed. It is practically clogproof as there is no impeller nor other obstruction in the line. The sewage collects in a completely enclosed chamber, allowing no odor to get out. It is expensive, but in the long run it is the best to provide for this purpose.

Where less expensive equipment is wanted to handle sanitary sewage, a nonclog type is available which is quite satisfactory. The purchaser should be sure to install sanitary sewage nonclog ejectors in closed basins if possible.

For the collection of surface or subsurface water, an open bilge type of ejector is satisfactory. If the building has a low level, this type of ejector can also serve as an emergency float control in case a large water main breaks or some other accident occurs.

Basins for the above sewage ejector should normally be of cast iron, although brick or cement is sometimes used.

Controls for these ejectors are in most instances completely automatic with emergency alarm provisions to indicate a nonoperative condition.

For the delivery of water to high buildings with gravity or cushion tanks, it is necessary that water pumps be installed.

The centrifugal type of pump has been developed in recent years to the point where it is the most satisfactory pump for this purpose in that it can be designed for a very high operating efficiency if the operating head is definitely determined before installation. These pumps have from one to five stages, depending upon the operating head.

Electrical controls for these pumps are essential as they are always arranged for complete automatic operation, and these controls should have incorporated in them low voltage and overload protection.

A signal system generally is connected to these pumps to indicate the condition of the water in the tank and whether the pump is operating or whether it is supposed to operate and has failed to do so.

Covering for plumbing, except in the case of hot water, is generally for the purpose of avoiding rapid deterioration, inconvenience, or damage to decoration. Cold-water piping, cold-water tanks, and even soil piping will sweat during humid weather, and the alternate wetting and drying condition of the pipes will cause rather rapid erosion as well as considerable inconvenience.

Building Furnishings

In purchasing building furnishings, they can be divided into two classes: those purchased for display and those purchased for use. Display furniture is used

in lobbies, halls, and reception rooms. Small display purchases are comparatively simple and can be handled the same as the purchase of furniture for daily use, except that a more decorative style is desirable and color schemes must harmonize. On all large lobby purchases, bids should be taken from several reliable sources. Specifications should accompany these bids, covering every detail. With these bids the vendors should submit layouts showing the location of each piece of furniture and the color of the covering so that the buyer may visualize just what the lobby will look like when complete. Quality is, of course, the most important factor, but artistic design should be given almost equal consideration. The first impression is often a lasting one, and, therefore, it is important that lobby and reception hall furniture be correct.

We shall now take up, item by item, the furnishings which are used daily and must be both attractive and of good quality.

In furnishing an apartment, it should be treated as individually as though it were being decorated for an owner. The importance of this fact cannot be overestimated. Many prospective tenants may not be entirely conscious of good or poor style in decorating and still be impressed with a pleasing ensemble for its eye value.

A neutral background is decidedly the best plan either in paint or wall paper. Particularly is this true in living rooms. Many people have decided preferences for colors, and, if a color is not pleasing, a sale may be lost for this reason alone. There is also to be considered the fact that many guests bring in their own accessories which may be out of harmony with a color background. The one place where a more decorative background may be considered is the dining room or small dinette. Here attractive wall papers may be used with very pleasing results, inasmuch as the furniture in this room is for the most part of wood construction and a decorative background makes a pleasing setting.

The first thing to consider in furnishings is the carpet. Again it would be wise to use a plain and neutral background. The use of figured carpet is a decided handicap in the selection of other furnishings—so also is a strong color. A carpet in a warm deep tone with a neutral wall gives the perfect background for the furniture and draperies to be used. Interesting patterns may be brought into the scheme with the selection of furniture coverings and draperies.

Carpet can be purchased either through specifying the trade name or grade of a certain manufacturer, or, if the buyer is competent, he can specify the type of yarn, length of nap, number of wires, and many of the other specifications by which carpet buyers judge values. For the average buyer, however, the use of the manufacturer's trade name should be the most efficient method.

After the carpet selection, the next important consideration is the color scheme to be emphasized. The draperies may well be the next selection, and, if a combination of colors appears in the fabric as in chintz, linen, or homespuns, the color notes in the sofa and chairs may be selected in harmony with the draperies.

It is, of course, essential to select furniture of good construction, with the idea in mind of its serviceability, but never should good construction alone be the deciding factor. Good construction may be obtained in well-styled furniture, and, in this day when so many people are style conscious, the buyer must constantly keep this fact in mind.

Simplicity in decorating is to be sought, not only in the interest of good taste, but for economic reasons as well. The interchange of furniture in apartment buildings is a constant practice, and the fitness of simple, clear-cut lines is never questioned in any grouping. Two or three different color schemes may be worked out in a building and yet be correlated enough so that pieces of furniture are interchangeable to advantage; for instance, the

exchange of one chair from one apartment to another might please a prospect enough to make a sale.

The selection of window curtains is optional, of course. Venetian blinds are most desirable when the price is not prohibitive, and a good heavy grade of marquisette will make an attractive curtain where blinds cannot be used.

Apartments should be furnished with the best possible stove that the property can afford. The stove is the working tool of the housewife, and there is so little difference in cost between a good stove with proper insulation and a cheap type made up to sell at a "price" that the buyer would be very unwise to select the stove as a place to economize. The size of the stove should be proper for the apartment, and the color should be selected to blend with the decorations of the kitchen. The modern stove, with its flat top and bright colors, is a very attractive piece of kitchen equipment, and the appearance, as well as the other features, should receive consideration.

The miscellaneous items which are necessary to complete the outfitting of an apartment should be purchased so that they will blend into the general scheme. The quality should be commensurate with the rent to be obtained. For example, lamps might be purchased for $1.00 each or lower for the low-priced apartment, whereas $5.00 to $10 might be spent for lamps to be used in an apartment renting for $150 to $200 a month.

Dishes and silverware should be carefully selected from a pattern carried in stock by several sources of supply. This will bring about competition, and with several suppliers handling the design it is quite likely that the manufacturer will continue to keep the pattern on the market.

Refrigeration

Refrigeration can be divided into two types: unit boxes and multiple plants.

A multiple domestic refrigeration plant, in the general sense in which the term is applied by those responsible for the management of property, means a single compressor connected by piping to two or more boxes. The total number of boxes handled by one compressor is governed only by the physical conditions involved in the installation and may run as high as 200 to 300 units.

Multiple or, as they are sometimes called, central refrigeration plants have a very definite value to certain classes and types of apartment buildings. They furnish an economical type of refrigeration at a minimum amount of capital expenditure per net cubic foot of box capacity.

The policy of providing automatic refrigeration instead of iceboxes to apartment occupants started around 1925. It had a great sales value and was taken up so quickly that within a few years apartments without such service operated under a tremendous handicap.

The unit refrigerator created this demand as it was just then becoming recognized and offered a splendid market for the manufacturer. The cost of the units in both capital and maintenance charges was high, and as a result brine systems, which had been used quite generally to refrigerate boxes remote from the central plant, were adapted to apartment house purposes. This was an unfortunate development as the brine is a very undesirable and expensive method of conveying refrigeration at low temperatures.

The first brine systems were installed by concerns experimenting in the most efficient method of furnishing refrigeration. Many buildings suffered, but, as a result of these experiments, excellent multiple plants are now available. In most areas, city codes govern the installation, and gases have been developed which are relatively safe up to a 20 per cent concentration. Concerns selling multiple refrigeration systems claim the following advantages:

1. There is but one compressor and motor for the entire building.

2. The power required for this one unit is less than one fourth of the total power required for the several individual units.
3. There is but one plant to service, and the only work which must be done in the various boxes is a careful check of the one or two operating parts of the evaporator.
4. Each box is provided with individual shutoff valves so that for repairs no more difficulty is undergone than with unit refrigeration.

The following items should be considered in the installation of a multiple plant:

1. A good, reputable compressor of sufficient size should be installed.
2. A good box should be purchased. It should have a porcelain interior and preferably a porcelain exterior, although this latter is not so vital.
3. It should have good hardware and should be of modern and efficient design.
4. Care should be taken that the minimum liquid line head is maintained on the compressor so that the compressor can operate at a normal range without the aid of a booster pump. This applies particularly to buildings ten to twelve stories or higher.
5. The piping should be hard copper with sweated joints or extra heavy steel pipe with welded joints.
6. All brass fittings should be drop-forged.
7. At the point where the service for an individual box is taken from the risers, individual shutoff valves should be installed in both the liquid and gas lines.
8. The piping from the riser to the box should be of soft copper to permit the moving of the box.
9. All piping should be protected and rigidly placed.
10. The gas should be Freon or another make equally acceptable to the city authorities.
11. A device should be provided to give an alarm if there is a sudden loss of gas in the system.
12. Special attention should be given to the condensing equipment so that there is not a constant loss of gas through the water.

Due largely to tenant choice, a great many buildings are now purchasing unit refrigeration, removing either old iceboxes or an obsolete multiple plant. In the purchase of this refrigeration, one of the first things to be considered is the size of the apartment and the amount of rent received. The size of the box purchased should be sufficient to accommodate the number of people who would normally occupy the apartment, but the cost should not be higher than the additional rental that could be obtained by the installation of this new equipment.

There are any number of good refrigerators on the market today. They are a great deal like automobiles. It is pretty hard to make a mistake should we purchase from any one of the leading companies. Consideration should be given to the history of the company making the product and to the stability of the distributor. The distributor is the one to whom the purchasers must turn for service when the equipment starts to wear out or if an installation should be unsatisfactory.

Probably the first thing to be considered in the purchase of refrigeration is the anticipated income from the apartment. Does this income warrant the furnishing of mechanical refrigeration?

Probably the next question is how much mechanical refrigeration does the income warrant, and can a higher rental be obtained by the installation of this new equipment?

Unless all these details can be co-ordinated and worked out upon a business-like basis, refrigeration cannot be properly installed. There would be no point in installing a small refrigerator in an apartment normally occupied by six to eight people. They would be better off with a large icebox.

After a decision has been reached that refrigeration may be properly installed, the following items should be considered in the selection of the equipment:

1. The refrigerator cabinet should be well made and should be insulated throughout. In making your choice, check the thickness of the insulation. Thickness of insulation should give you economical operation.
2. The compressor should be of sufficient capacity to care for the peak loads in hot weather. Insufficient compressor capacity will keep the motor running constantly, which not only wears out the motor, but makes the tenants believe that they are being robbed of excessive current consumption.
3. Be sure that the controls are of the latest

type so that when the tenants read the glowing advertisements they will not be dissatisfied with the equipment that has been furnished.

4. The motor capacity should be checked. The motor is the heart of the refrigerator and should be one of a manufacturer who has a reputation for making long-life, trouble-free motors.
5. In the same manner, the evaporator, condenser, and all other parts should be checked to see that they are of the latest design and from a good reliable concern.

Some companies feature their special equipment, such as interior lights, hydrators, pedal door openers, sliding shelves, extra water bottles, special freezing chests, ice tray releases, etc. These are all very desirable, but do not give them preference over the more important parts of the refrigerator. It costs much more to build a good cabinet than to furnish any number of these special features.

Ventilating Equipment

Ventilating equipment is provided in buildings for two major purposes—health and comfort. Ventilation is not air conditioning but merely the providing of proper amounts of air to locations within buildings that cannot under natural and varying weather conditions provide sufficient outside air to maintain the health of the occupants. It has been proved that the air movement over people lowers their temperature because of evaporation from the skin with its consequent picking up of the latent heat of evaporization. Modern buildings today are so constructed that the providing of ventilating as a substitute for outside openings is absolutely necessary from an economy and operating point of view.

Industrial plants with their certain classes of manufacture which emit unhealthful odors or dust must have good ventilation in order to preserve the lives of their employees. A good example of this is in paint spraying, where it would take but a very short time to cause a man's death if there were no way of removing the majority of the paint suspended in the air. This same is true for grinding and polishing equipment, chemical plants, and others of similar nature.

The ventilating fan and its duct work are many times advisably supplemented with air filters, heating coils, and such other accessories so that regardless of the weather or suspended dust particles some comfort is obtained. Ventilating equipment and the distributing ducts should be designed for the particular purpose they are to serve, and this cannot be done without the services of a competent engineer. The purchasing agent should under all circumstances make such purchases as these through recognized firms.

Air Conditioning

Air conditioning is a step beyond ventilation and has as its two main purposes the providing of comfort and the facilitating of manufacturing processes.

Air conditioning includes the control of the physical properties of the air, such as the relative humidity, the dry bulb temperature, air moisture, and wet bulb temperature. It is a science that is in the hypothesis and theory state of development for, although there have been established many definite psychological data, the whole scope of air conditioning is as yet not within the sight of the most advanced scientific and engineering research laboratories.

A purchasing agent in buying this equipment should by all means make use of a well-known and established engineering firm in order to protect himself against the misleading representations of bidders.

There are so many controversial factors in air conditioning that the person making the purchase can only protect himself with a proper design and application. This is a very much talked of subject today, and it is difficult for any writer to put down specific rules for requirements to be obtained. However, a few items should be considered in the purchase of such equipment. It must be borne

in mind that it is possible to buy parts of an air conditioning system from separate concerns, but the entire plants should properly be purchased from one organization.

A definite inside wet and dry bulb temperature should be possible with a definite outside wet and dry bulb temperature.

These inside and outside temperatures bear a relation to each other and vary with the climate in which the equipment is installed. There must be air movement without drafts or stratification.

It must be determined whether air conditioning is being provided for the regular occupancy of a space or for those who are likely to use the space for only a short time.

The most important thought to bear in mind is that the industry is changing rapidly, and an effort should be made to get the latest approved systems.

Air conditioning for winter use consists primarily of the addition of suitable amounts of moisture to the air. This phase of air conditioning is adaptable to ordinary ventilating systems and should be added wherever it is possible.

Some considerable research has been going on for years in order to determine the value of comfort and health in relation to working efficiency. One phase of this development has been crystallized into a definite improvement, and that is the providing of abnormal quantities of ozone in the air during the periods when the occupants are not present. This excess of ozone kills bacteria and retards their growth to a very great extent.

ELEVATORS

For a new installation, the type of elevator to be selected must be carefully chosen as it will vary with the type of property, whether it is apartments, manufacturing plants, or commercial. These are dealt with separately.

For small apartment buildings of moderate price, a push-button type of elevator with automatic innergate, manually operated corridor door is sufficient.

For very fine apartment buildings, full collective push-button control, automatically operated inside and outside gates, variable voltage leveling, and all of the very latest and best equipment possible should be provided.

For commercial properties, such as office buildings, it has been found that the latest designed, high-speed equipment with automatic inside and outside doors and an attendant on the elevator is most suitable. In some instances, it has been necessary, because of the restricted floor space, to run two cars in the same hatchway, but this requires a special arrangement.

For the carrying of passengers in industrial properties, an intermediate speed car with operator and hand-operated doors, the simplest type of machinery but with a very large capacity, is generally the best to provide.

Each installation is so individual that it is difficult to write an outline to govern all equipment purchased. It must be borne in mind that a thorough analysis of the traffic conditions must be made prior to purchase.

Practically all elevators, except the very heavy freight cars, are now electrically driven, the hydraulic being used only for slow service lifts.

For the alteration of cars already installed, the purchasing agent must be guided by the restrictions that are established by the building structure as well as by the exact needs of the building. A great many elevators were installed in the last ten years that are altogether unsuitable for the service they are performing. A purchasing agent should make a study to determine what can be done to improve the service and lower the cost of maintenance, and each installation must be analyzed and treated separately.

LIGHT BULBS

The sources of supply in light bulbs

may be divided into two main classes: those representing Westinghouse and General Electric and the so-called "independents."

Westinghouse and General Electric are by far the largest manufacturers of light bulbs, which they market through dealers. The individual dealers solicit the retail accounts and make contracts generally for a period of one year. These contracts carry discounts based upon volume, and, if the volume reaches a higher discount class than that for which was originally contracted, a rebate is given at the termination of the contract. All contracts are scrutinized at the central source, and dealers are encouraged to report any irregularities such as giving a customer more discount than that to which he is entitled.

The independent manufacturers usually give a higher discount than either Westinghouse or General Electric and are much more flexible in their selling arrangements.

There are a large number of dealers representing the independent manufacturers, and unfortunately through these independents not all of the bulbs sold reach the high standard set by the leading independents.

Dealers representing both sources of supply use about the same sales arguments, and the testing of their products takes such a long period of time and has so many variables that the purchase of electric light bulbs can become very complicated considering the amount of money involved.

Buildings using a small amount of power and consequently few electric light bulbs can exchange the bulk of their bulbs free at the public utility stores. There is a small charge for bulbs of high or unusual wattage.

Brick, Cement, Stone, Etc.

Building materials should be thoroughly considered before a selection is made.

Stone divides itself into several groups, the most generally used of which is the Bedford type. It gives a pleasing mellow texture to the outside of a building and weathers beautifully if erected in suburban communities. It is difficult to clean, and it should not be used in quantity in cities where the air is very dirty.

There are other types of stone such as Illinois washable limestone, variegated Indiana limestone, and others which are used for specific architectural effects.

Brick is one of the oldest building materials and is still as satisfactory for masonry work as any other product that has been developed. Caution should be exercised in the purchase of brick to eliminate inferior quality, and, generally speaking, the pressed face brick of any color is a desirable material.

Terra cotta is a very old material but very new in American use, particularly in colors. It has a great many desirable features, but it was exploited commercially before it was fully developed. At present it is suffering because of this early misuse. Its function, primarily, is that of decoration, cast spandrels, and the like.

Granite is as fine a material as nature has provided. Its greatest handicap is its expense. It is generally the most desirable of all materials for bases and lower portions of a building in that when polished it has a very hard impervious surface that requires a minimum amount of maintenance.

Cast stone is being developed to a point where it will be a desirable building material. It is cheaper than limestone and yet looks considerably like limestone. It is now possible to make it with an impervious and almost self-cleaning surface. It may be cast in blocks of the proper size in a yard, shipped to the job, and erected with comparatively small labor cost.

Terrazzo is a combination of cement and marble chips mixed together and puddled so as to bring the marble chips to the surface. It makes a very serviceable floor and is subject to design. It will carry any color in which marble comes.

Marble is a natural product and serves very well for wainscoting, floors, stairways, and such other formal purposes. It comes in a variety of colors and textures and is one of the most valuable architectural materials.

Cast glass slabs have somewhat taken the place of marble in recent years because they have a completely smooth and impervious surface, whereas marble, except for travertine, is a fossil deposit and is porous. Structural glass, as it is commonly known, is becoming a very popular material due to the colorful effects that can be obtained and is being used to a wide extent in corridors, washrooms of commercial properties, kitchens, bathrooms, and lunchrooms. It is also very easy to keep clean and polished.

Cement is one of the most useful and generally used building materials. It is a natural product, and its applications are unlimited.

In all of the above materials, the success of their use rests in their application, and the direction of this application is properly the function of a competent architect or builder.

WALL FINISH

The purchasing agent should determine the type of interior wall finish most desirable for the room involved, basing his decision upon the occupants, the necessity of light reflection, the character of the room, and other operating facts.

Plaster is the normal base material and, when combined with Portland cement, gives a very hard surface and may or may not be covered.

Paint, either lead and oil, an inside type of paint, or an enamel may be applied to give a certain decorative effect. This paint, if in a location where it is not likely to be too badly damaged, should be good enough to withstand several washings before repainting becomes necessary.

Wall paper is one of the best decorative interior finishes that is known. It comes in all grades, styles, and qualities. Paper should be judged wholly by the quality and character of the room.

Wood paneling is one of the most desirable interior room finishes. It is now obtainable as a veneer to be applied over a plaster wall. Any of the well-known woods can be obtained in either solid paneling or veneer.

All of the above interior materials are commonly used. The serviceability rests in the purchasing agent's making the proper selection of material for the wall to which it is to be applied and the employment of skilled mechanics to do the work. No material, however expensive or desirable, will be satisfactory if not properly applied.

OTHER MISCELLANEOUS ITEMS

Sound absorption materials should be purchased from manufacturers competent to provide several grades. The material should be commensurate with the demands for sound absorption, and the prices will vary from fifteen cents to sixty-five cents a square foot depending upon its sound absorption qualities. Instruments are available on the market to measure the amount of sound existing in any room, and, if this instrument is used, it can be determined just what percentage of this sound should properly be removed.

If the question of acoustical treatment concerns an auditorium or some very complicated problem, the purchasing agent should obtain information from the recognized acoustical authorities before attempting to proceed with the work.

Lumber for mill use and structural purposes should be purchased with great care to make sure that the proper grade and kind of wood are used. There are places where second-grade lumber may be used, such as risers in stair treads, but, it is very essential that load-carrying beams and columns be of the best grade, clear grain lumber. If the lumber is to be exposed to the weather, it is even more important that the proper kind of wood be purchased, as some woods, such as fir, red

wood, and cypress, will withstand weather conditions much better than others. The purchasing agent, if he is not informed, should obtain information from the Lumbermen's Association and from the various books available on the characteristics and applications of lumber before making extensive purchases.

Roofs should be purchased after an analysis of the exact needs of the buildings to which they are to be applied. It is readily understood that a dwelling roof will be entirely different from a flat factory roof. The purchasing agent should consider these things and make certain that he has specified the proper type of roof as well as a good roof.

Glass is an item that should be specified clearly, giving the thickness, degree of clarity, and the purpose of the glass.

Belting comes in grades and types and must be selected upon the basis of the work it is to do. At one time leather belts provided the only means of transmitting power from one piece of machinery to another except through a gear chain. Leather belts still serve a large share of the industrial uses for belting, and it is important that the purchasing agent in selecting a belt buy only the best grade leathers from the most reputable firms.

V-type belts entered the power transmission field some fifteen years ago, and they have a good many advantages. They shorten the needed center distances considerably. They increase the angle of contact on the driving and driven pulley a great deal and have considerably less slippage. The purchasing agent, for normal purposes, should attempt to use this modern type of belting as it is cheaper to purchase, lasts longer, is more easily replaced, and is more efficient in power transmission.

Pneumatic tubes offer a relatively modern means of transmitting messages and small articles quickly from one department of a concern to another. In the purchase of pneumatic tube systems, the buyer must be very careful to analyze the exact needs of the firm and to provide a system that will convey the documents with the minimum amount of wear and tear. The purchaser must be careful not to buy too large a system or a system with too large piping as there is considerable waste because of the initial cost and the space requirements for running pneumatic tube piping through the building. The purchaser should always use a competent engineer to lay out the kind of system he finds is needed and to obtain all of the devices for power saving that have proved to be successful.

Due to American inventive genius, new equipment is being placed in the market daily. A buyer should devote as much time as possible to the study of these new products, being very careful to see that all purchases, where possible, are of modern design. A careful check should also be made of the business stability of the concern manufacturing the equipment and its record for supplying service or repairs.

Do not purchase an inferior product because of the price; we usually receive that for which we pay, and the serviceability of the equipment will be remembered long after the price is forgotten.

* * *

Basic Thoughts and Average Figures

By W. A. HELWIG

IN the process of operating an investment property, especially a multiple dwelling, it seems that the development of a *management program* gains ever-rising importance. Planned economy, followed by strict adherence to the program, is an essential, without which the effects become purely circumstantial because the final analysis will show that certain influences, unless recognized and harnessed, are apt to work against those most deserving of success.

Let us ponder for a moment over these certain influences and analyze them as integral parts of a great scheme that dictates the rise and fall of price, but leaves the level of value comparatively undisturbed.

First: The earning power of the renting public establishes the market price of rentable space by the law of supply and demand.

Second: The purchasing power of the rental income affects the margin of capital return by reason of fluctuating material and labor costs.

Third: The value of the profit-dollar dictates the value of an investment property in being subjected to the changes of the prevailing monetary unit.

Success or failure of operation depends primarily upon the recognition, adaptation, and application of these principles. Rental values may crash or decline gradually. The purchasing power of the rental income may descend far below or rise far above the general value curve, and the profit-dollar may become a wavering dream or remain a reality. Negative or positive, the result reflects the degree of management efficiency.

Property values are neither constant nor do they change without provocation. They yield to the aforegone economic influences, which, to some extent, may be beyond our control, but should never vanish beyond the realm of observance.

Therefore, considering these basic influences, conceding that success or failure is largely the result of management and admitting the power of change, an attempt has been made to subject the management program to a rule or law which crystallizes these various ideas. How valuable this rule or law may become to the individual depends upon its scientific correctness. Since it is the result of observation only, future observation will either prove or disprove its effectiveness.

> *"The value of an investment property scientifically operated should rise and fall only in relative proportion to the earning capacity of a community as a whole, as related to the fluctuating purchasing power of the prevailing monetary unit."*

METHOD OF MEASURE

Chart No. 1 (page 344) has been devised as a method by which the degree of operating efficiency may be measured and graphically reflected. Its applicability to properties located in Detroit only is regrettable. However, a similar chart may be constructed in other cities in a similar manner.

Curve No. 1—Public Purchasing Power:

Three elements have been considered, as follows, based upon figures published by the United States Bureau of Labor Statistics and the Industrial Department of the Detroit Board of Commerce.

A. Employment relative to population.
B. Wages paid.
C. Cost of living.

Curve No. 2—Property Value:

In devising this curve, an equal number of properties, both of fireproof and of ordinary construction and located in highly desirable and as highly undesirable neighborhoods, have been averaged. Since 1929 these properties have been either owned or operated by Mr. H. P. Holmes,

heading his own organization, so that accurate records were available.

For the purpose of comparison, only the net operating income has been taken into consideration, irrespective of the capital structure. Only in this manner could a curve be devised, which may serve as a guide in the operation of other properties.

Studying this chart, it becomes quite evident that the value of properties carefully operated has remained in closer proximity to the public purchasing power than the value of properties which were permitted to drift (Curve No. 3). Whether or not it is possible to parallel these two curves more closely, only the future can tell.

A brief history of the property reflected in Curve No. 3 will show that it is by no means an exception. It is a representative of approximately 50 per cent of all investment properties.

Curve No. 3—Subject Property:

The property consists of a twenty-family, three-story, walk-up apartment building of ordinary construction. It was completed in the year 1924 for approximately $65,000, with the aid of a first mortgage of $47,600. In 1929 it was sold for $100,000 and owner-operated; it finally reverted to the mortgagee, and the mortgage foreclosure was in the amount of $59,000. During 1932 many local real estate brokers accepted its listing at $20,000 but failed to effect a sale.

Since 1933 the value has risen constantly, with the result that the owner would now refuse to accept $50,000 for this property. As has been seen from Chart No. 1, the value curve of this subject property did not rise absolutely paral lel with Curves No. 1 and No. 2 because rehabilitation expenditures had to be limited to the property's income. Necessary maintenance had to be postponed, thereby increasing rather than decreasing the amount of deferred maintenance.

Chart No. 2 (page 345) represents the actual performance of this building in regard to income only.

Besides showing that the monthly cash receipts increased from $395 in February, 1935, to $775 in October, 1937, the chart indicates heavy vacancies during the summer months of 1935 and 1936. The reason seemed to lie in the tenants' habit of occupying apartments with their obvious conveniences during the winter months and spending the summer months in cottages.

Even though these vacancies were at the time appreciated, facilitating the rehabilitation program without creating ill will, it became clear that a more detailed tenant application and a more thorough check had to be employed. The effect has been proven by comparatively low vacancies during 1937.

To construct a management program for this particular property is no doubt fascinating to interested parties. Those having their own problems with which to contend would justly regard this as a left-wing extreme. On the other hand, many operators may have cases to match it. The fact remains that it is an extreme and can hardly serve as a working guide.

To select comparable properties is often difficult if not impossible; and, if possible, they may often prove to be as unwise as the strict application of averages. Averages do, however, furnish a reasonable starting point, especially if they represent the fair media of a fairly well-balanced number of comparable units.

The program for a specific property, therefore, must not be based upon averages but reflect upon them. It should be based upon facts inherent to the physical and financial structure, constructed from reliable and comparable performance averages, and reflect a conservative projection into the future with due regard to statistical economic cycles.

Operating Averages

The following *operating averages* are actual 1937 results of fourteen multiple

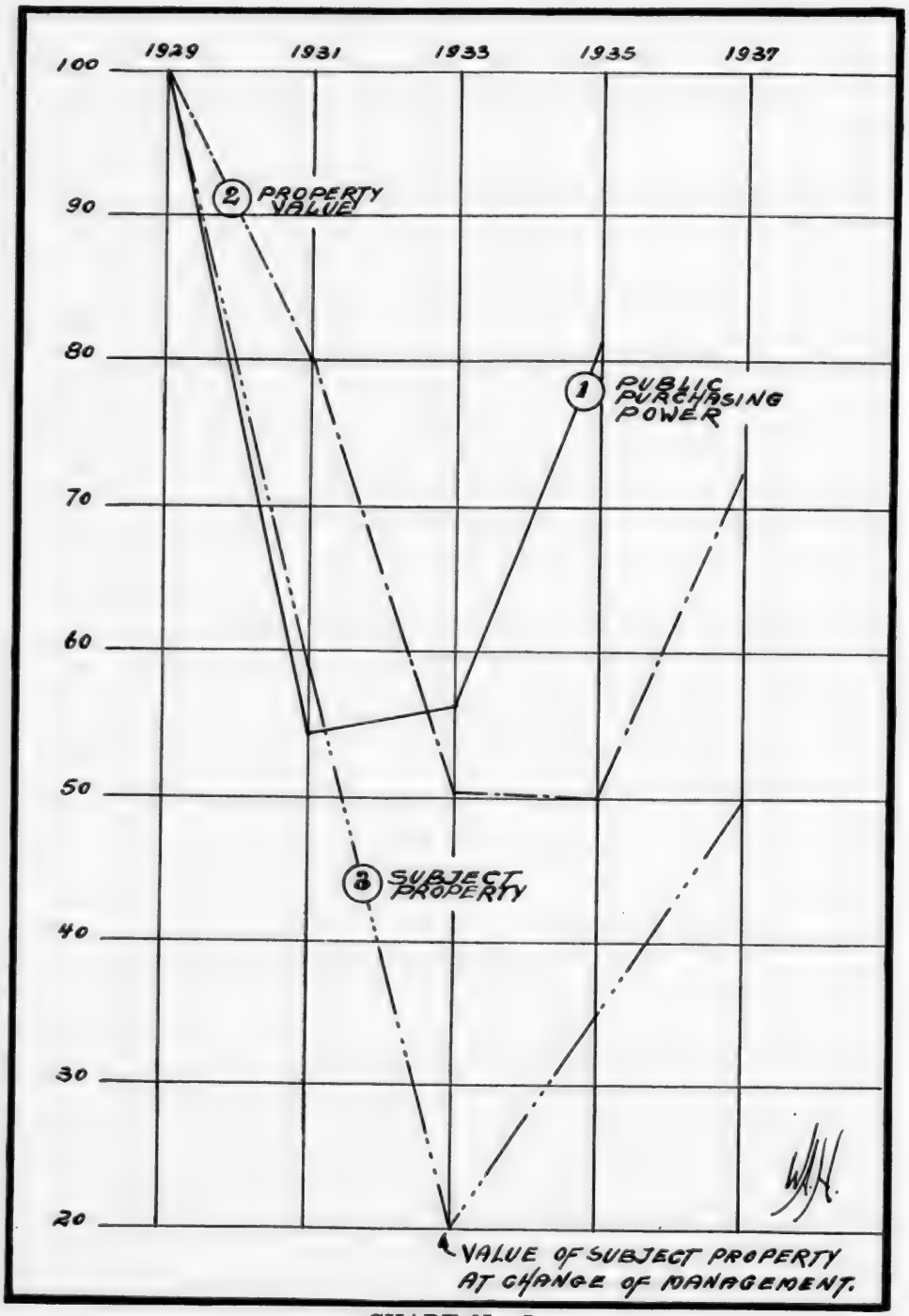

1929
1931
1933
1935
1937
100
90
80
70
60
50
40
30
20
2 PROPERTY VALUE
1 PUBLIC PURCHASING POWER
3 SUBJECT PROPERTY
VALUE OF SUBJECT PROPERTY AT CHANGE OF MANAGEMENT.

CHART No. I

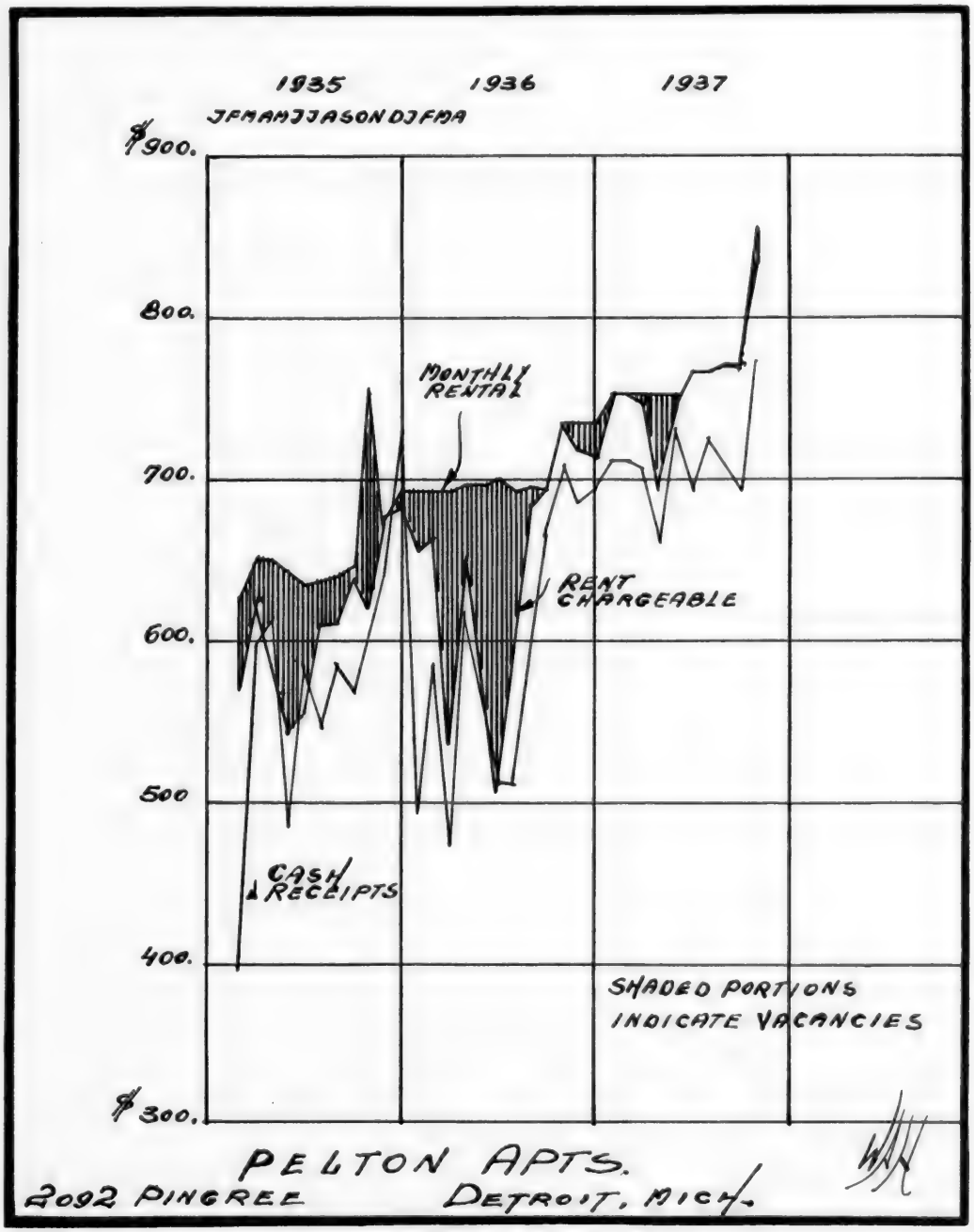

1935
1936
1937
JFMAMJJASONDJFMA
$900.
800.
700.
600.
500
400.
$300.
MONTHLY RENTAL
RENT CHARGEABLE
CASH RECEIPTS
SHADED PORTIONS INDICATE VACANCIES
PELTON APTS.
2092 PINGREE DETROIT, MICH.

CHART No. II

dwellings located in excellent and extremely poor locations. They are evenly divided, 50 per cent above and 50 per cent below the average. All buildings are of the ordinary construction type and consist of one-, two-, three-, and four-room apartments.

Treating the average as a hypothetical building, one would obtain this picture:

Number of apartments	28	Apts.
Number of rooms per bldg.	108	Rms.
Average no. of rooms per apt.	3.85	Rms.
Cubical contents of av. bldg.	255,360	Cu. ft.
Sq. ft. of rentable floor area	15,390	Sq. ft.
Average life of building	16	Yrs.

Cost of Building:	
255,360 cubic feet @ $.33½ per cubic foot. (Based upon 1937 Detroit Real Estate Board cost of ordinary brick construction)	$85,550.00
Less depreciation to date for 16 years average life and based upon 40 years economic life of building: Rate 2½ per cent per year	34,220.00
Present depreciated value	$51,330.00
Land Value:	
1/7 of building cost, new (as this figure is considered the usable value of land in relation to a building of this type)	12,220.00
Total depreciated replacement value as of December 31, 1937	$63,550.00
Value per square foot of rentable area	$ 4.13

COMPARATIVE STATEMENT OF INCOME AND EXPENSES OF AVERAGE BUILDING

(All figures are based upon the square foot rentable floor area.)

	1936	1937
INCOME—Rentals	$.824	$.957
EXPENSES—Operating		
Wages	$.052	$.056
Plumbing and Heating	.019	.023
Janitor Supplies	.004	.004
Fuel	.069	.069
Decorating	.054	.044
Electricity	.076	.072
Gas	.022	.019
Refrigeration Expense	.007	.008
Water	.014	.015
Maintenance and Repairs	.025	.020
Telephone	.003	.003
Electrical Repairs	.005	.004
Management	.046	.049
Miscellaneous	.011	.009
Total Operating Expenses	$.407	$.395
FIXED EXPENSES		
Taxes	$.103	$.103
Insurance & Social Security Tax	.011	.011
	.114	.114
Total Expenses	.521	.509
Net Operating Profit	$.303	$.448

The income shows a marked increase over 1936, which is in line with general market conditions. Both figures represent actual collections. The vacancies amounted to less than 1½ per cent per year for all fourteen buildings during 1936 and 1937.

Expenses include no reserves for annual replacements, which have been provided for elsewhere. In general, all items have been fairly constant. Slight increases are noticeable in wages, plumbing and heating, water, and management fees. The higher decorating cost in 1936 is attributable to deferred maintenance in several buildings.

RECAPITULATION

Value Per Square Foot Rentable Area		$ 4.13
Operating Expenses per Sq. Ft. (based upon 1937 operating costs)	$.395	
Add Insurance—all kinds ¼ per cent	.011	
Taxes—based upon assessment of 80 per cent of cost @ $30.00 per M. Rate 2½ per cent. Taxes—based upon depreciated value amount to same rate, 2½ per cent	.103	
Total Operating Cost	$.509	
Add Reserves for Annual Replacements		
Heating Equipment	$ 40.00	
Refrigeration	220.00	
Lighting Fixtures	25.00	

Gas Ranges	170.00	
Building	100.00	
OR		.036
Add Capital Requirements 6 per cent		.248
Depreciation based upon remaining economic life of 25 years, 4 per cent of Depreciation Value		.134
Total Operating and Fixed Charges per Sq. Ft.		.927
Gross Rental Income Average of 14 Apartments for 1937		$ .957
Operating Cost and Fixed Charges		.927
Surplus per Sq. Ft. Rentable Area		.030
Surplus per Average Building		$461.70

CONCLUSION

The aforegone method has been devised to serve as a guide in the construction of a management program as well as in the process of appraising. This method assumes that the investment shall be recaptured in equal annual portions during the remaining life of the building and that interest shall be paid annually on that portion remaining in the property.

According to some accounting practices, this procedure may not seem proper, especially since the common practice is to charge the building with the interest on the total investment regardless of amortization expended.

Past experience has proven that no investment property, being subject to physical and economic depreciation, is capable of filling such obligations. Chart No. 1 further proves that, under the most favorable conditions and under exceptionally conscientious supervision, a multiple dwelling can do no more than adhere as closely as possible to the general curve described by *public purchasing power*.

* * *

The Executive Control of Individual Properties

By WILLIAM EHRAT

PROPERTY management has come a long way in a decade. Once considered the figuring of accounts to determine how much a building's income exceeded its outgo or that extra activity which kept an organization from slipping into a depression's morass, management today is *executive control* of every property entrusted to the company.

Such control yields a two-phase benefit. To the owner, regardless of whether he has one small property or a number of large ones, *executive control* makes his holding the center of a concentrated study by organization specialists who develop the property's greatest potentialities as to earning power along the lines which produce maximum satisfaction to everyone concerned. Large and small holders should be treated with equal responsibility. No building is too small, and no owner's holdings are too inconsequential to receive personal executive attention. Out of adherence to this policy, there has accrued to our organization an experience with all sizes of properties which enables us to know just what is proper for every building listed on our management records. Sometimes the success of a program with a small building points to better direction of a large one, or vice versa. Conservation of values is the strongest recommendation of executive control to the owner.

To the management company, *executive control* points to maximum earnings because the most efficient job is done. In the case of distressed properties, it gives the Realtor a control to the extent that he is often given the sale of the property when it is finally ready for disposal. In numerous instances, specialized management direction has saved a property to the equity owner when under his own operation it would have been lost to the mortgagee.

A particular example comes to mind. A client who was about to lose his building had already made an assignment of rents to the insurance company which held the mortgage. The building was placed with our office. We set up a budget for the property and directed it in relation to that budget. It soon began to emerge from its complicated financial condition. The mortgagee's interest revived; the mortgage was extended. We deposited the surplus above operating costs and interest in an account against taxes. That property was worked out of its difficulties, and the owner of the equity now secures an income from his investment. There is no doubt about our continuing the management of this building.

When the management of a building is entrusted to our office, notice is given the various departments—bookkeeping, renting, purchasing and maintenance, and insurance. Each is given complete information about the property so that the proper accounts can be set up and service and maintenance schedules established. The bookkeeping department receives the leases with instructions to set them up on the books; a statement showing the status of every tenant's account accompanies the lease, also information regarding when and where the owner desires his monthly statement of receipts and expenditures mailed. Any existing vacancies are promptly listed on our rental sheets which are distributed to our brokers and group supervisors. Under our system of bookkeeping, we can draw off a statement of any owner's account at any time.

The purchasing and maintenance department is given a complete statement of any special provisions, such as limited expenditures, special sources of supply designated by the owner, existing contracts, etc.

Physical and Financial Status

Each building as it comes under our control is classified as to type: fireproof, elevator buildings; three-story walk-ups; dwellings; etc. These classifications are subdivided into groups according to geographic location, each group having a separate supervisor, all working under the direction of an executive at the headquarters office. Individual building managers, as in the case of an apartment hotel, are under the direction of the supervisors, again according to geographical location.

When a property is placed in charge of a supervisor, he immediately makes a careful study of it. Statements of income and expense are obtained from the owner or former manager for study to determine whether the maximum rentals for that type of building are in force; whether decorating costs, heating costs, repairs, etc. are excessive, either in relation to income or because competitive bids were not taken to keep costs down; etc.

All leases are made and controlled through the main office, and in buildings where leases are not written, due to the changing occupancy as in furnished buildings, a monthly audit is made. The auditor may reach a building at nine o'clock in the morning or midnight, and the books must be ready for audit at any time he sees fit to call. In this manner, we keep a close control of cash, vacancies, miscellaneous charges, etc.

Following a study of the financial status, the supervisor makes a physical inspection from basement to roof, from which he prepares a detailed inspection report for the headquarters office. He lists his findings and then his recommendations for improvements, repairs, etc. His report must show the type of building, number of family units, location, age, type of heating system and its condition, state of roof and exterior, number of vacancies, and, in fact, every point of information that will enable us to establish an operating budget and decide how much of an outlay is immediately necessary to restore the building to a satisfactory operating condition.

If we do not already know the neighborhood, our supervisor makes a checkup as to schools, shopping facilities, and neighborhood trends. It may be that our honest opinion is that real estate values are due to decrease in this particular locality. In fairness to the owner, we recommend that he list his property for sale.

Cost of Operation

The cost of operation is studied in relation to the character of the building. We suggest those changes which we confidently believe would be highly beneficial. For example: a building having 148 furnished apartments of one-, two-, and three-rooms was committed to our management. At that time there were twenty-six vacancies and the operating cost was very high, due to the necessary services in furnished buildings—maid service, laundry service, care of furnishings, replacements, etc. The owner agreed with our proposal that the apartments should be rented unfurnished, and we proceeded at once to execute the plan. Removal of furnishings took place gradually over one and one half years. Tenants were given the privilege of purchasing their furnishings at reasonable prices. A number of vacancies existed while the change was taking place because some of the tenants wanted the services which are usually associated with furnished apartments. However, we found that the demand for unfurnished apartments of this size was very great, and in a short time occupancy was practically 100 per cent. Needless to say, the cost of operation was appreciably reduced. Rents for unfurnished apartments were, of course, slightly lower than for furnished ones of the same size, but increased occupancy and reduced costs brought the owner a much higher net return.

Executive control concerns itself with

obtaining the maximum income from every property. Our procedure, already outlined, is carefully supplemented by the program which calls for the attractive maintenance of each building's exterior as well as the interior of public spaces, clean and orderly apartments, and the employment of courteous and attentive help to service tenants' needs.

To keep costs of operation down, we have a definite procedure for the control of purchases. Supervisors are permitted to write their own orders for miscellaneous supplies and minor repairs only.

Orders are written in triplicate, the original going to the vendor, the duplicate being retained by the supervisor, and the triplicate going to the main office for executive attention. Every order is reviewed by the executive before it passes to the order department; in this way he has complete knowledge of the daily purchases of the entire organization. The triplicate copy is held in the order department until the invoice is received. The bill is then checked against the order by the order department to see that it is correct as to extensions, items purchased, and the prices charged. It is then ready for the supervisor who must come into the office to check the bills on the properties he manages. Before coming to the office he goes through his order book and indicates on each order whether the supplies have been delivered, decorating completed, or satisfactory repairs made. He brings his order book with him so that he may refer to his copy to determine whether or not the bill is ready for payment.

Up to this point the bill has passed through the hands of two people—the clerk in the order department and the supervisor. It is then given to the purchasing department for checking, after which it is ready for payment.

DECORATING COSTS

Decorating work is given considerable attention before an order is written. The supervisor keeps a record of the decorating work performed in each apartment every year so that he may be able to discuss intelligently with every tenant any work requested and, in addition, avoid a duplication of work done the preceding year. So many other property managers have already learned what we have discovered—when a tenant is given an increase in rent, he is inclined to request more decorating and additional services, whereas the mounting costs of decorating are a factor in increased rentals, and even then only the very necessary work is permitted to maintain the building properly.

When decorating is to be done, specifications are drawn and bids obtained from several firms. Each bid is checked very carefully, and, when the supervisor decides on the contractor to do the work, he writes his order and attaches the accepted bid and specifications, a record of the amount of decorating done the preceding year, the rental on the apartment, and whether the work is for a new or an old tenant. This order is not placed by the supervisor; it is sent to the main office with all this information attached. If it is found to be satisfactory after careful consideration, the order is placed.

MAJOR REPAIRS

Major repairs are also given a great deal of attention. All minor repairs are taken care of by carpenters, electricians, etc. upon a time and material basis and ordered by the supervisor. In the case of a large expenditure, such as a new roof, extensive roof and boiler repairs, tuck pointing, and numerous others, the supervisor must notify our building maintenance department. A member of our organization who has had a number of years' experience in building construction inspects the job to be done. He draws up the specifications and obtains at least three bids from reliable contractors. After a decision is reached with regard to which contractor is to do the work, the supervisor draws the order, attaches the ac-

cepted bid with specifications, and sends it all to the main office for further consideration. If everything is found satisfactory, the order is mailed to the contractor. When the work is finished and the bill presented, it must have, in addition to the approval of the order department and supervisor, the signature of the building repair director, which signifies to our executive staff that he has inspected the completed job and found it to be satisfactory.

Heating Costs

Heating costs are also checked very carefully. Figures covering these costs for the previous year are examined; if they are found to run too high, in comparison with the cubical content of the building, a competent heating engineer is requested to inspect the heating system and the property and to determine what improvements should be made in order to lower these costs. In many instances the installation of automatic stokers and improved hot-water heaters, with instructions to the janitor in the proper firing of boilers, has greatly aided in correcting these situations.

Light and Power

A few years ago, when maximum rentals were being obtained, the owners included gas, light, and refrigeration in the rentals of their apartments. Consequently, when, some time later, rents were reduced practically one half, the owners found themselves still paying these tremendous bills, in many cases amounting to from $5,000 to $6,000 per year for electricity and possibly $1,500 for gas. With such drastic reductions in income, it was impossible for the owners to continue to pay these charges. One of the first steps to reduce the costs of operation of buildings under our management was to incorporate in each new lease a clause to the effect that the tenant would pay for all electricity consumed in his apartment at the prevailing rate, and a meter was installed. A flat charge was made for gas at a specific amount per room. In this manner, the owner soon had enough income from these charges to the tenants to make the utility bills negligible.

Refrigeration

Central refrigeration units cost the owners of properties many thousands of dollars each year. In addition, a great deal of water is used in connection with these units, and the owner finds his water bills running exceedingly high. If the central plant has been in operation for some time, there will be large repair bills, and it is to the owner's advantage to install individual refrigeration in each apartment where the electricity consumed in its operation will be paid for by the tenant. It has been our experience on properties where we have made this change in refrigeration that the water bills also are reduced each month to approximately one half the previous amount.

Protection of Funds and Insurance

Each owner's funds are properly segregated in trust bank accounts and fully protected from the time of rent collection until the monthly balance is remitted to him. Every employee handling funds is bonded, and adequate burglary, theft, and holdup insurance is carried at all times.

A complete summary of the insurance in force at the time we take over the management of a property is secured from the owner and given to our insurance department. This department then analyzes the insurance coverage to determine if the property is adequately insured and the rates are correct. We require protection on public liability and on boiler and compensation insurance by having our name included on existing policies as an additional assured. If no such insurance is carried by the owner, we require him to indemnify our company from loss or damage arising from claims covered by the aforementioned types of insurance.

CONTROL OF TENANTRY

Our management program involves control of every tenant. We have a card system which tells us what type of tenant occupies any apartment of the thousands under our supervision. A card is made out for every tenant, bearing complete information as to building, location, apartment, etc. From the day the tenant enters the unit, every demand, complaint, or irregularity of any kind whatsoever is entered on that card.

Just as soon as a tenant telephones or comes in with a complaint or a request, the record card is secured from the files, and at a glance our employee has the desired information and can thus be guided in granting or refusing further requests. Otherwise he must proceed purely from memory, which may serve its purpose where a very few units or properties are under jurisdiction of an office, but which might easily cause great difficulty where the tenantry is extensive.

An important phase of the tenant record system is that it aids in weeding out troublesome renters. If numerous complaints accrue against a particular family, it may be better to ask the members to move than to permit them to remain and drive better tenants away. Again, an excess of requests from a tenant may reflect a destructive nature on the part of some member of the family, in which event it might be a money-saving decision to ask the tenant to vacate at the expiration of the lease. Should the owner of a property at any time want to know what tenants to weed out, it is a simple matter to look over the cards; the story is all there.

STATEMENTS TO OWNERS

Owners are concerned with the amount of net return; consequently, this point is emphasized to them, rather than the occupancy rate and rental charges. It is quite possible to have a building 100 per cent occupied, with collections excellent, and yet show a very poor net return if expenditures are not closely watched. This is a point we stress to the supervisors so they will not be inclined to attempt to give excessive decorating to offset an otherwise good gross income. Our monthly statement to the owner gives him a complete record of every rent charge on each apartment and the collections made. The disbursement sheet lists every bill paid during the month, and receipted bills are attached to the statement for every disbursement made. The statement is accompanied with a letter from this office explaining any unusual expenditure made during the month. No point is left unexplained for we want our owner clients to understand every detail in connection with their property accounts.

ANALYSIS OF INCOME AND EXPENDITURES

At the end of each month an analysis is made of the income and expenditures for each building under our executive control. Comparison of the rental value of the building and the rent charges made shows quickly whether the vacancy is out of line, and a comparison of the rent charges for the month with the total collections made tells whether the supervisor in charge of the property is collectiong rents as he should. Operating expenses for each month are compared with expenses of the preceding months—if any particular item, the water bill, for example, should take a sudden jump, it is a warning to inspect the plumbing. Each supervisor is supplied with copies of these statements so that he may know the financial condition of the buildings in his group.

Executive control in our organization is accomplished by keeping each department under the direct supervision of an officer of the corporation.

* * *

Management Charts and Their Advantages

By GEORGE W. SEILER

FOR years, in our office, we have talked more about executive management control than we have about anything else. Private and institutional owners have been demanding more scientific management; we decided that it had to be perfected to the point where their choice of management ceased to be a problem to them. In the first place, we needed to work out a more graphic method of presenting the property manager's merits. Certainly our volume of business would increase if we could present to owners at the outset the proof of a manager's developments of competency as well as honesty.

The result of our discussions was a five-point program for the revision of our management department. We shall confine this article to just one point—the development and use of charts in property management.

The executives of our company saw that our statistical department could be developed to serve us much as laboratories serve the medical profession by constantly scrutinizing and improving our methods. In charts, covering all properties coming under our executive management control, we could have a clear picture of both our achievements and our mistakes.

We have used these charts now for several years and are able to say that they have been of invaluable assistance, not only to ourselves, but to our owners as well. You can readily see how the value of a management organization increases in the mind of an owner when he receives with his statement a comprehensive picture of the progress of the buildings under its control. We have insured the retention of contracts for indefinite periods by presenting this valuable information.

A reproduction of charts covering a group of buildings we represent is displayed on page 355. We service our accounts with monthly flow charts, but we are sure that in most instances a semi-annual chart would be entirely adequate. Lack of space prevents our listing in this issue all the advantages of our system; however, we can consider the most important ones.

We know that the day of trying to withhold facts from the owners is past. It is far better for them to know exactly how a building is running, whether it is up or down. For one thing, you can profit immediately from a job well done. Furthermore, you are free to correct any mistakes inherited with a building before they have gone too far. And let us stress the necessity of catching mistakes early. In doing so, you not only keep your buildings free from danger, but you make your management more and more a necessity to the owners.

HEATING COSTS

The first group of charts completed in our office included a group of six buildings in the same city, all in comparable locations. Five of these were similar in construction; they were practically the same in number of units, cubical content, heating equipment, etc. When a clear picture of this group was presented in the form of a chart, we saw at a glance—without referring to old bills or ledgers—that the fuel consumption varied so greatly that there was certainly something amiss. So we had our maintenance department carefully check all the heating plants. We compared the type of fuel used in each property, found out which buildings were weather-stripped and which were not, and instituted a fuel chart which we have since required the superintendents to keep daily. We checked their method of firing boilers with an expert of long experience.

We procured outside reports and recommendations from engineers and fuel companies.

The result of this thorough check was astonishing. It enabled us to make definite recommendations to our owners. These recommendations were accepted, and the changes made saved hundreds of dollars yearly. The cost of the new equipment was retired in one heating season.

TAXES

Our charts also brought forcibly to our attention the apparently unfair taxes levied against certain properties in comparison with others similar in type, number of units, location, etc. The use of these charts in procuring tax reductions alone has justified their continued use. This type of evidence had never previously been brought before the Tax Board. The facts it presented showed so clearly the unfairness of certain assessments that opposition to any tax reductions was overcome; the Tax Board recommended that they be allowed, and they were eventually procured.

BUDGETS

Proper charts also present the facts you need to build a practical rather than a theoretical budget for a future period. They will assist in accomplishing what every managing agent seeks—the maintenance of a building or group of buildings at the lowest possible cost. They set forth clearly in percentages such items as the cost of decorating and the comparative salaries of superintendents. You can tell at a glance if there is an excess consumption of water or an abuse of the supply of electric light and power.

INCREASED BUSINESS THROUGH USE OF CHARTS

You can readily imagine the more favorable reaction of the executive of a large institution to whom you wish to sell your management services if you can tell him that your organization has a statistician who devotes full time to compiling such information. One of these charts placed on his desk will prompt favorable discussion regarding your firm's ability to handle his properties. It can be pointed out that it would cost his institution two or three times the small management fee paid the agent to install a similar service.

It is interesting and valuable to both owner and agent to compare these charts from year to year. These case histories are the evidence which proves to the owner that your management is essential to him, that it is the best he can procure.

As the head of your business, you are probably called to the telephone sometimes when your supervisor in charge of certain properties is not available. Perhaps the executive of a large institution is at the other end and expects you to answer immediately such questions as: "What was the income on the Broad Street property last year?" or "How does the cost of operation of the Main Street property compare with that of the Market Street property?" If you have charts like those shown on pages 355 and 356, it is an easy matter to answer promptly and correctly. And Mr. Executive will probably say when he hangs up, "Well, there is one agent who certainly has his business under control."

Any well-rounded organization can create a feeling of confidence and security if its executives and management department have continually at hand the following information on their buildings:

1. The total annual rent charge.
2. The total annual vacancy.
3. The total annual rent roll.
4. The total gross rents collected.
5. The total annual rent loss.
6. The total annual operating expenses.
7. The total annual taxes.
8. Sundry items.

These items can all be kept up to date by adoption of the monthly flow charts in connection with the semi-annual ones.

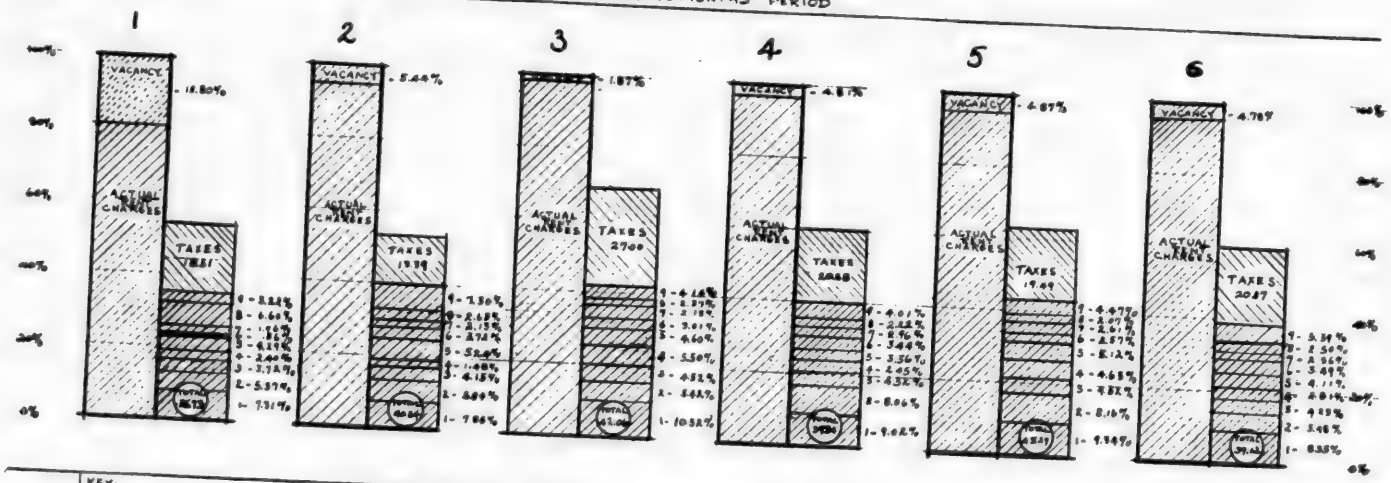
From time to time our attention is also

(Continued on page 359)

YEAR ENDING DECEMBER 1936

GRAPH SHOWING RELATION OF MAINTENANCE & OPERATING COSTS TO TOTAL ANNUAL RENT ROLL

100% OCCUPIED
DATA FOR 10 MONTHS PERIOD

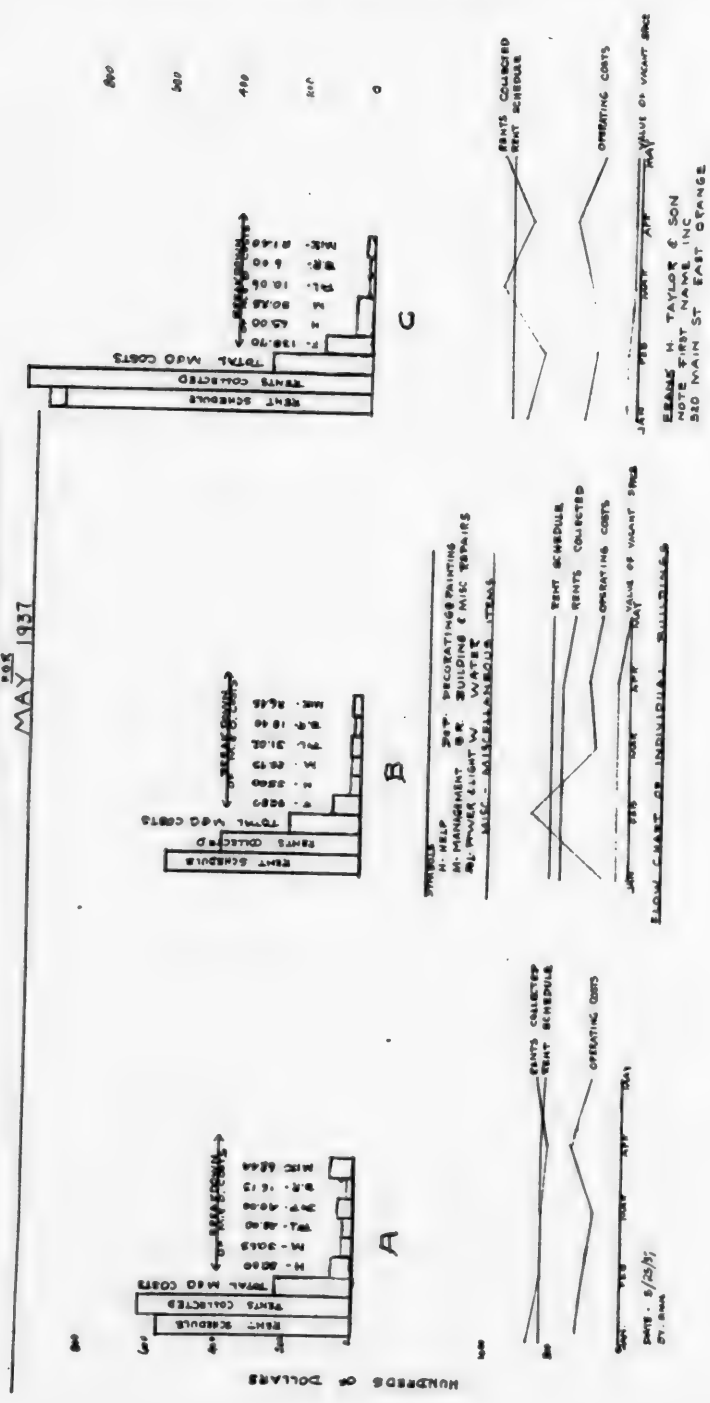


KEY:
1- FUEL
2- DECORATING & PAINTING
3- MANAGEMENT
4- HELP
5- POWER - LIGHT
6- WATER
7- SUPPLIES & EQUIPMENT
8- BUILDING REPAIRS
9- MISCELLANEOUS

ITEMS	1	2	3	4	5	6
TOTAL ANNUAL RENT ROLL	14592.50	6979.00	15002.50	12228 00	7554.00	7447 50
VACANCY	2746.00	369 00	282.00	598 00	368 00	356 00
RENT SCHEDULE	11846.50	6610.00	14720.50	11630 00	7186 00	7091.50
TOTAL OPERATING EXPENSE	8214 19	2734.43	6312.72	4871.77	3270.53	2913.48
TAXES	2702.15	908.04	4031.30	2316.35	1472.02	1884.65

FRANK H TAYLOR & SON INC
822 MAIN ST - EAST ORANGE

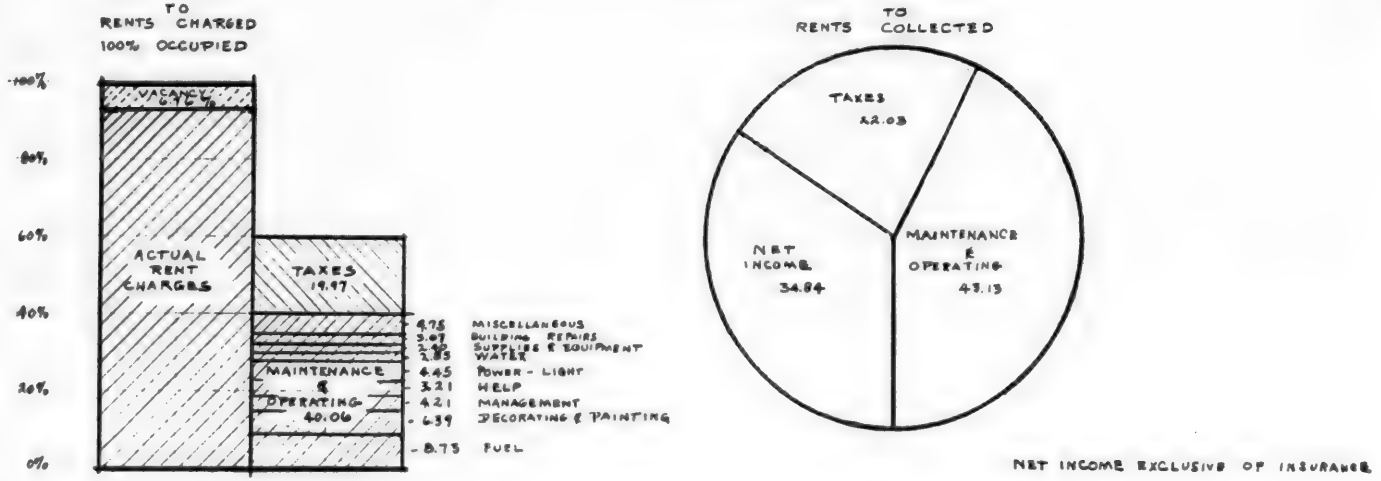
DATE - 1/24/37
BY - DMN


GRAPH SHOWING
MONTHLY INCOME & COST ITEMS
MAY 1937
HUNDREDS OF DOLLARS
RENT SCHEDULE
RENTS COLLECTED
TOTAL M&O COSTS
A
B
C
RENTS COLLECTED
RENT SCHEDULE
OPERATING COSTS
VALUE OF VACANT SPACE
JAN FEB MAR APR MAY
EXAMPLE H. TAYLOR & SON
NOTE FIRST NAME INC
320 MAIN ST EAST ORANGE

YEAR ENDING DECEMBER 1926

COMPOSITE AVERAGE CHART
SHOWING RELATION OF MAINTENANCE OPERATING COSTS
ON THE FOLLOWING BUILDINGS

1 ARLINGTON
2 MAPLEWOOD
3 NEWARK
4 IRVINGTON
5 NEWARK
6 IRVINGTON



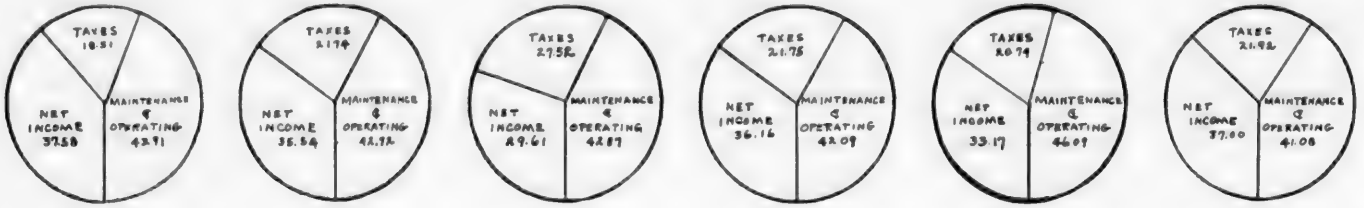
FRANK H. TAYLOR & SON INC.
320 MAIN ST. - EAST ORANGE

DATE - 1/24/27
BY - D M N

YEAR ENDING DECEMBER 1936

PERCENTAGE CHART
SHOWING RELATION OF MAINTENANCE COSTS TO RENTS COLLECTED

DATA FOR 10 MONTHS PERIOD



1 2 3 4 5 6

NET INCOME INCLUSIVE OF INSURANCE

FRANK H. TAYLOR & SON INC.
520 MAIN ST. EAST ORANGE

DATE - 1/24/37
BY - D.M.N

called to the profitable use our sales department makes of these charts. The salesmen include them in their portfolios and use them in referring to any of the items just listed in discussions with purchasers of income property. We can trace many sales directly to this source.

The charts also help the appraisal department to set up their capitalization figures as well as other items contained in the modern technical appraisal report.

We have broken our charts down in three different classes:

1. The composite and average chart showing relation of maintenance and operating costs to the whole account, both as to rent charged at a 100 per cent occupancy and as to actual dollar rent collected (page 357).
2. The graph showing the relation of maintenance and operating costs to the total annual rent roll upon a 100 per cent occupancy basis showing the individual buildings side by side (page 355).
3. The percentage chart showing the relation of maintenance cost to the actual rent dollar collected on the individual buildings shown side by side (page 358).

Presented in these three different sections, the charts give you the actual and theoretical pictures individually and collectively.

Our management department handles close to six thousand units, which vary from one-family homes and cold-water tenement flats to large, exclusive ten-story apartments and office buildings. We have become so accustomed to these charts and refer to them so often that we consider them as important to us as the gaining of additional properties. We believe that all well-rounded management firms not already using such a system will adopt a similar type of management control before long. The expense is justified many times over by increased management, sales, and the feeling of security it provides. The management of real estate has evolved from a trial and error system into a standard profession.

* * *

What to Study

C. M. JONES, EDITOR

Librarian, The Institute of Real Estate Management

Book Review

Abbott, Edith. THE TENEMENTS OF CHICAGO. *Chicago, The University of Chicago Press, 1936. 505 pp. $5.00.*

FOLLOWING is a review of Edith Abbott's *The Tenements of Chicago* done in four parts:

PART I. (Original review by John H. Millar, Chicago.)

The Tenements of Chicago is a bleak 500-page report of field research during twenty-five years by graduate students under the direction of the University of Chicago School of Social Service Administration. It is edited by the faculty of the school under the leadership of Edith Abbott. From these studies, frankly admits Miss Abbott, "seem to come only further illustrations of the futility of such investigations."

Twenty-four scattered areas, representative of the varied conditions found in Chicago tenements, were canvassed house-to-house in the decade before the War: a total of 18,225 different apartments or households, in 6,294 buildings, in 151 blocks. In recent years, the same areas were canvassed house-to-house again. The comparative data appear at length in the volume.

While rent has doubled—from a mean rent of $9.00 per month to $18 per month for a four-room apartment—living conditions continue on the same miserable level. Much of the book is devoted to picturing sordid facts about sordid conditions—congested, dark, insanitary quarters, poverty, evictions, and the like.

The outlook is discouraging. "The problem can be solved only in the long future, with immediate steps piecemeal, and almost insignificant in results." Such meager progress as is reported during the past quarter of a century is mainly a by-product of technological change, the No. 1 improvement cited by Miss Abbott being "the elimination of dreadful manure heaps," due to the shift from horse to motor vehicles.

The comparative brevity of the concluding chapter, "The Long Future," and the fact that it draws but little on subject matter of preceding chapters testify further to the essential futility of the fact-gathering, even though it did have "great value for training purposes" to the young people who worked at it "with interest and sometimes with enthusiasm."

Reasons for this futility may be basic ones, applying not only to *The Tenements of Chicago* but to other social science research projects as well.

The social organism is living, changing. It moves only one way—toward the future. Past events are dead and gone. They have significance only in so far as they relate to problems arising in present and future living. The relationship of facts to living is what counts, not the facts themselves. The method of research used in *The Tenements of Chicago* is one that puts emphasis on facts as such, rather than on their relationships to today's problems and tomorrow's living. Hence, the futility.

A type of research that starts with a living problem, such as the big, indefinite housing problem, breaks that problem down into various limited component problems, and then attacks each individually might yield different results. Dead facts would be sought only when and if they serve a definite purpose. Such research would face the future rather than the past. Results might be useable, not futile.

PART II. (Comment to Mr. Millar by D. E. Mackelmann, Executive Director of Metropolitan Housing Council of Chicago.)

If I may say so, I believe that your view is too unsympathetic. I, myself, found large parts of *The Tenements of Chicago* very stimulating, particularly those which show the progress of some of the activities of the Chicago Health Department and other City Hall groups, as well as those which describe the growth of neighborhoods and communities in various parts of the city.

While I agree with you entirely as to the need of approaching a social science research problem in a fashion quite different from that of physical science techniques, I believe that Miss Abbott also would agree with both of us. Therefore, I think it might be well to point out that where we fall short is in making the data gathered of vital value to the community. The real question is what should be the relations between research groups and organizations which make use of their research. How can the work of these two groups best be integrated?

As to the "futility" to which Miss Abbott refers, it is my feeling that it is based not so much upon factors found in these investigations but more upon the total philosophy of Miss Abbott as to the effects of the uneven distribution of wealth which does not let all share in the "full life" of the community. You will recall that Miss Abbott quotes in a footnote from Catherine Bauer's *Modern Housing*, "The housing problem can never be solved by itself; in final analysis it depends on the distribution of purchasing power."

PART III. (Comment of a young lady, engaged in housing work, who read Mr. Millar's review, but had not read Miss Abbott's book.)

Suppose we grant Miss Abbott's failure at relating the facts to a community program—vitalizing them in short. Perhaps that is not her job, and that is why she fell down on it. There are research skills, and also creative and administrative skills. If, as I believe with Mr. Millar, research is futile unless utilized, then it is also true that without research the creative and administrative skills are useless. You have to get at the facts first. Then if they are to mean anything, in the social sciences at least, you have to use them in a definite program. I agree that emphasis should be, not on facts as such, but on "their relationships to today's problems and tomorrow's living."

PART IV. (Breakdown of "the housing problem" which Miss Abbott's book stimulated Mr. Millar to append to his otherwise negative review.)

The following questions point out certain specific problems included in "the big, indefinite housing problem." Looking at them as separate problems lessens our inclination to throw up our hands and say, "Let Uncle Sam do it!"

For the solution of some of the problems indicated below, mental energy and resourcefulness are more needed than money. Local leadership, which is close to the problems, will often get results better than a more remote national leadership. Progress would be more satisfactory if existing groups and institutions would apply their several energies, simultaneously, each concentrating on a specific problem in which it has deep interest and with which it is especially qualified to deal.

1. How can dollar value of housing to rich and poor alike be increased?

2. What are proper minimum standards of health and decency, first in old housing and second in new, and how can these best be established and enforced in a given community?

3. How can local governments decrease housing costs, increase values, and stimulate private building through economical provision of good schools, adequate streets and parks, police and fire protection, sound zoning laws, fair building codes, and otherwise?

4. How can taxation be adjusted so that it encourages rather than discourages low-cost housing?

5. How can scattered parcels of tax-abandoned property be possessed and consolidated by exchange, thus becoming available as housing sites or accessory park space?

6. How can sizeable areas of cities be assembled for new housing projects without the land having to be purchased?

7. How can large-scale rehabilitation be organized upon a neighborhood basis, with demolition, repairs, and new building integrated into a plan of simultaneous action by numerous property holders within that neighborhood?

8. How can building of low-cost housing be planned and scheduled upon a continuing, year-around basis with adequate annual wages to all workers involved and decreased unit cost per dwelling produced?

9. How can it be made easier for skilled building trade workers to invest their time and skill in building their own homes with resultant decreased rental or financing charges ever after?

10. How can the self-interested desire of employers for good housing for their employees be made instrumental in providing such housing, without paternalism and without impairment of workers' freedom?

11. How can housing policies and procedures within a given community be best adjusted to existing racial groupings, problems, and prejudices?

12. How can the traditional American self-help spirit, as evidenced in our widespread home ownership, be mobilized and made effective in development of large-scale, low-cost, genuine cooperative projects in areas of cities where ownership of individual homes by persons of low income is impossible?

13. How can large-scale, low-rent housing projects be made attractive investments for trust funds and other large pools of private capital seeking conservative investments at low interest rates?

14. How can research pertaining to housing, whether social, economic, or technological, be so related to emerging problems that it contributes directly to organized action for their solution? (The first three parts of this review deal largely with this problem.)

15. Whence are to come the initiative, creative imagination, and dynamic leadership needed for promotion and organization of large-scale housing enterprises in which there is no private gain for the entrepreneur?

—By permission of *The American Federationist* (January, 1938, issue).

* * *

New Articles

"Standards in Planning Today's Hotel," by F. H. Randolph and C. I. Sayles.

One of the jobs of an efficient property manager is to assist in planning the space before the building is erected. Two professors of hotel engineering give their sound advice to persons interested in hotel management. Here are detailed data and statistics on the cubage of the hotel as related to rooms, types of spaces, and their sizes and all kinds of practical suggestions for arrangements of space in order to give the best service. Other articles in this issue helpful to managers of hotel properties are: "Communication Systems in Modern Hotels"; "It Pays to Rehabilitate Hotels"; and "Economic Aspects of Hotel Design," a bibliography of hotel design and pictures and floor plans of large hotels. *Architectural Record. January, 1938, p. 105-138. $1.20.*

* * *

"Large Scale Housing."

Here is a complete picture of the current building scene, giving its past, its present status, and problems and possibilities. There is a rich market, under the new provisions of the Housing Act, for private capital, primarily in large-scale rental construction. The editors have convincingly shown, by graphs, charts, statistics, and various kinds of data, that now is the advantageous time to use investment capital to build. The article is illustrated with many attractive photographs of different projects. Large-scale housing will present the field of property management with new and different problems. Begin to study the situation by reading this timely article. *Architectural Forum. February, 1938, p. 110-124. $1.20.*

* * *

"'Drive-in' Bank Opens New Field."

The Vernon branch of the Security-First National Bank of Los Angeles is the only "Drive-in Bank" in the world. This new innovation may prove to be a model for extensive bank modernizing. The new unit offers three unusual banking features. These are:

1. Special "drive-in" wickets where a motorist may handle simple banking transactions without leaving his car.
2. Automobile parking area within the banking structure and adjacent to the lobby and working space.
3. New low-type streamlined counter screen.

Pictures illustrating these unique features are included. A layout of the grounds and building is also shown. *American Builder and Building Age. February, 1938, p. 52-53. $0.45.*

* * *

"The Liability Problem," by Ashley St. Clair.

Apartment house owners are subject to damage suits on all sides from a multitude of different causes. Some claims are trivial, and many are troublesome and peculiar. As a result, the landlord must pay several hundred dollars on account of injuries caused by a defect he knows never existed. To a casualty insurance department, these claims are not unusual but commonplace and handled every day. The insured owner can turn over such suits and feel assured that things will be taken care of efficiently and at a minimum expense. He pays for the insurance, of course, but the premiums never equal the losses experienced in handling these matters himself. *The Apartment Journal. February, 1938, p. 14-16. $0.40.*

* * *

"Accent On Renting," by Harold H. Egan.

Successful renting is named the real "backbone" of the business of property management. Renting is first in importance to the owner, so finding new tenants and seeing that leases are renewed should constitute the agent's primary job. Mr. Egan says: "Vacant buildings do not lend themselves to expert maintenance." Renting requires footwork on hard pavements and a kind of salesmanship that is not discouraged after the first visit. Renting is a difficult business but very essential. *The Economist, Annual Review. January 22, 1938, p. 5-6. $0.45.*

* * *

"Renting Methods and Practices."

Experts in property management give you the benefit of their experiences and advice in nineteen short articles on various phases of the business. To give an idea of the scope covered, read some of the titles: "Satisfied Tenants and Lease Expiration File Source for Prospects"; "Tenement Tenants Are Sensitive to Tactless Management"; "Verbal Advertising Found Best"; "Good Maintenance Invaluable"; "Fixed Prices For Special Services"; "Lease Expiration File and Loose-Leaf Register Assist in Renting"; "Tenants Recommend Buildings"; Etc. There are several more on very pertinent points, and all are well worth reading. *Real Estate Record, Metropolitan Edition, November 6, 1937, p. 19-34. $0.70.*

* * *

We apologize: On page 281 of the November issue of the JOURNAL, *under "New Articles," credit was not given to* REAL ESTATE *for the following articles: "Covenants of the Lease," by J. Edward Newberger, which appeared in its September 18, 1937, issue, p. 10; and Realtors—Advertise Your Offices," by Joseph B. Ford, which appeared in its October 23, 1937, issue, p. 7.*

By-Laws
of
The Institute of Real Estate Management

ARTICLE I

Objects

SECTION 1: The objects of the Institute shall be:

A. The establishment of a Code of Ethics and Standards of Practice;

B. The identification and registration of responsible and competent managers and management agencies of real estate;

C. The establishment of coordinated standards and units for the scientific recording of experience in the management of real estate;

D. The exchange of management experience;

E. In general, the fostering of knowledge, integrity, and efficiency in the management of real estate.

ARTICLE II

Membership

SECTION 1: There shall be two classes of membership in this Institute: (1) Individual and (2) Organization, as hereinafter provided.

SECTION 2: Individual Membership in this Institute shall be open to any individual who:

A. Holds, and remains in good standing in, any form of membership in a Member Board of, or an individual membership in, the National Association of Real Estate Boards;

B. Is actively engaged in a responsible capacity and in such a manner that his regular duties involve the administrative operation of real property. He shall have been actively so engaged with a good record for at least five years, of which two years may be represented by university or college work acceptable to the Institute;

C. Subscribes to the By-Laws, the Rules of Professional Conduct, Standards of Practice, and the Official Pledge established by the Institute;

D. Files an application for admission to membership on official forms furnished by the Institute, giving the detailed information requested therein in full and signs an irrevocable waiver of claim against this Institute or any of its officers, committee members, or other officials as individuals, or as a group, for any official act in connection with the business of this Institute and particularly as to its or their acts in electing or failing to elect, or disciplining him as a member;

E. Satisfactorily establishes his knowledge of and his ability, methodically and analytically, to create and execute management programs for typical individual properties;

F. Satisfactorily passes a written examination given by the Institute; provided, however, that this subsection may not become effective until September 1, 1938.

SECTION 3: Organization Membership in this Institute shall be open to any partnership, trust, or corporation who:

A. Holds and maintains any form of membership in a Member Board of the National Association of Real Estate Boards; provided that its principal office or any branch office lies within the territorial jurisdiction of such Member Board. In the event that the candidate for Organization Membership in this Institute, or an organization already admitted to Organization Membership in this Institute, does not have its principal office or any branch office within the territorial jurisdiction of a Member Board of the National Association of Real Estate Boards, at least one of the principal officers of such organization shall hold direct individual membership in the National Association of Real Estate Boards;

B. Is actively and reputably engaged in the business of real estate management;

C. Has among its officers one or more individuals who hold Individual Membership in this Institute;

D. Subscribes to the By-Laws and Standards of Practice established by this Institute;

E. Segregates clients' funds in separate bank or trust account or accounts which shall at all times cover in full all money due clients;

F. Maintains a satisfactory Fidelity bond on all employees engaged in accounting for or handling of funds;

G. Does not receive nor accept any commission, rebate, discount, or benefit in connection with the management of property except with the full knowledge of its clients;

H. Files a formal application on the official application form furnished by the Institute, giving all of the detailed information and data therein requested and signing an irrevocable waiver of claim against this Insti-

tute or any of its officers, committee members, or other officials as individuals, or as a group, for any official act in connection with the business of this Institute and particularly as to its or their acts in electing or failing to elect, or disciplining him or it as a member.

SECTION 4: All members shall be admitted to this Institute only by ballot of the Governing Council. Three negative ballots shall exclude.

SECTION 5: Whenever an applicant seeks admission to Individual Membership in this Institute. the Secretary shall send to all members a confidential digest of the candidate's qualifications and shall set a time limit for reply. It shall be the duty and obligation of each member to reply to such notices and to advise the Admissions Committee of any favorable or unfavorable facts known to the member regarding the candidate.

SECTION 6: The Institute shall exercise effective disciplinary powers over its entire membership, including expulsion for cause, as set forth in Article XV of these By-Laws. The affirmative votes of at least four fifths of the entire Governing Council shall be required to discipline a member, and a minimum vote of four fifths of the entire Council shall be necessary for expulsion.

SECTION 7: Only Individual Members of the Institute in good standing shall have the privilege to vote or to hold office.

ARTICLE III

Examination

SECTION 1: Each candidate for admission to Individual Membership must pass a satisfactory examination, the questions and problems of which shall be designed to test the candidate on the following points:

A. Familiarity with the By-Laws;

B. Familiarity with the Institute's Rules of Professional Conduct;

C. Familiarity with the terms commonly used in or allied with real property administration;

D. Working knowledge of management practice and procedure, including familiarity with:

a. Procedure in analyzing the economic background of property;

b. Procedure in assembling, classifying, and analyzing neighborhood data;

c. Determination of unit operating costs;

d. The fundamentals of property maintenance;

e. The development and analysis of property management programs;

f. The fundamental reasoning applied to landlord-tenant legal relations;

g. The ordinary mechanics of collecting, disbursing, and accounting for owners' funds;

h. Proper methods of creating and executing property budgets.

SECTION 2: Examination as to qualification for Individual Membership will be prepared by the Governing Council of the Institute or such committees as it may appoint. The examinations of candidates may be delegated to the officers of the local chapter of the Institute where such exists. The papers and records covering this examination will be forwarded to the Governing Council of the Institute for grading and final action.

SECTION 3: The members of the Examinations Committee of the Institute should not know the identity of the individual candidates whose papers they rate. Therefore, each candidate shall be given an examination number, which shall appear on each page of his examination papers in lieu of his name, and his name shall not appear anywhere in the papers, on the examination certificate, or elsewhere.

SECTION 4: The examination papers shall be filed at the Headquarters Office at least one week prior to the meeting of the Admissions Committee.

SECTION 5: Any candidate who fails to receive a satisfactory rating on his written examination may, after a period of six months, apply for a supplementary examination.

ARTICLE IV

The Individual Members' Pledge

SECTION 1: Each Individual Member shall sign, as a condition of membership in The Institute of Real Estate Management, the official pledge of the Institute which is as follows:

I hereby pledge myself to act in strict accordance with the principles, declarations, and regulations of The Institute of Real Estate Management.

I pledge myself in particular to place honesty and thorough work above all else in my administration of real property; to advance myself constantly in knowledge and ability through the study of literature on real estate management, the instruction of eminent teachers, the interchange of experiences with fellow Certified Property Managers, and attendance at meetings of the Institute whenever possible; to be faithful to the personal interests of my professional brothers and to seek their counsel when in doubt of my own judgment; to render willing help to my fellow Certified Property Managers; and to give my services freely to the Institute as required or desired.

Moreover, I pledge myself to shun unwarranted personal publicity and dishonest money seeking as disgraceful to our profession; to render complete, thorough, and honest service

to landlord and tenant alike regardless of monetary consideration; to strive assiduously to build goodwill for the properties under my charge and to use my best talents at all times to preserve and maintain the value of such properties; to secure the greatest possible net return to the owners of properties entrusted to my management; and to give devoted attention to the safety and comfort of tenants of these properties.

Finally, I pledge myself to cooperate in advancing and extending, by every lawful means within my power, the influence of The Institute of Real Estate Management.

ARTICLE V

Nomenclature and Emblem

SECTION 1: All Individual Members of the Institute may identify themselves by the designation "C.P.M.," which shall be the abbreviation for the words "Certified Property Manager" and shall signify Individual Membership in The Institute of Real Estate Management. Individual Members may use these initials immediately following their signature, as, for example, John Doe, C.P.M., in signing letters, reports in articles or books, on letterheads, and elsewhere.

SECTION 2: The designation "C.P.M." shall not be used in any case following or immediately in connection with the name or signature of a firm, partnership, or in such manner that might be interpreted as referring to a partnership, a group, or to any one other than the individual rightly entitled to use the designation. Such use shall always be dignified and in a manner satisfactory to the Governing Council and in accordance with such rules as the Council may issue from time to time.

SECTION 3: The official emblem of Organization Membership in the Institute shall be the following:

This emblem may be used by Organization Members on stationery, business cards, in advertising or elsewhere in connection with the name of the organization.

SECTION 4: The official emblem of Individual Membership in this Institute shall be the following key:

Each Individual Member of the Institute shall be presented with this emblem-key upon his admission to membership, and he may wear it as a pin, badge, or watch charm as long as he remains an Individual Member of the Institute in good standing.

SECTION 5: The emblem-key of Individual Membership and cut carrying the imprint of Organization Membership in the Institute shall remain the property of the Institute at all times and shall be returned immediately to the Secretary of the Institute if the membership of the individual or organization to whom it is issued is, for any reason, terminated.

ARTICLE VI

Certificates

SECTION 1: Each member shall receive a certificate of membership issued by the Governing Council of the Institute.

SECTION 2: The membership certificate issued to a member shall be the permanent property of the Institute and shall be returned promptly to the Secretary of the Institute when the membership of the individual or organization to whom it is issued is for any reason terminated.

ARTICLE VII

Dues

SECTION 1: The annual dues of Individual Members shall be $20.00.

SECTION 2: The annual dues of Organization Members shall be $5.00.

SECTION 3: Subsequent to their election, members shall not be entitled to a certificate or to any other benefits until dues for at least twelve months have been received. Failure to make such payment within ninety days of notice of election may void the election to membership.

SECTION 4: Dues shall become payable on January first of each year, and, in the case of memberships accepted subsequent to that date, dues for the second year shall be adjusted upon a calendar year basis.

SECTION 5: There shall be an admission fee of $10.00 for Individual Members and also for Organization Members. This fee of $10.00 shall

accompany each application for admission to membership and shall not be returnable; it shall be used to pay the necessary costs of the investigation of the qualifications for membership and for examinations.

SECTION 6: Each application for admission to membership shall be accompanied by membership dues in full for a twelve months' period in addition to the admissions fee. This advance payment of membership dues shall be held on deposit in a reserve account by the Institute. If, for any reason, the candidate is denied admission to membership, the full amount shall be refunded. If the candidate is admitted to membership, his membership shall date from the day on which the Governing Council takes such action, and membership dues shall be considered paid in full for a twelve months' period.

SECTION 7: Five dollars of the annual membership dues for Individual Members, provided for in this Article VII, shall be for an annual subscription to *The Journal of Real Estate Management.*

ARTICLE VIII

Governing Council

SECTION 1: There shall be a Governing Council consisting of a minimum of nine (9) and a maximum of twenty-one (21) members, to which shall be added one appointed by the Board of Directors of the National Association of Real Estate Boards, which Governing Council shall control and manage the affairs of the Institute.

SECTION 2: One third of the elective members of the Governing Council shall be elected at each annual meeting to serve for a term of three years.

ARTICLE IX

Nominating Committee

SECTION 1: The President of this Institute, by and with the consent of the Governing Council, shall appoint a Nominating Committee consisting of five members, at least thirty days in advance of the annual meeting.

SECTION 2: It shall be the duty of the Nominating Committee to nominate at least one person for each vacancy in the Governing Council, which nominations shall be reported by mail to all Individual Members at least two weeks prior to the annual meeting. Additional nominations may be made by a petition signed by at least five Individual Members in good standing, providing such nominations shall be in the hands of the Secretary at least five days prior to the annual meeting.

SECTION 3: The report of the Nominating Committee and any additional nominations shall be read at the first session of the annual meeting for the information of the Members.

ARTICLE X

Election of the Governing Council

SECTION 1: The annual election of one third of the elective members of the Governing Council shall take place at the second session of the annual meeting.

SECTION 2: Every Individual Member in good standing, present at the annual election, shall be entitled to one vote. Election shall be by ballot in all cases where additional nominations have been made by petition as provided for in Article IX of these By-Laws.

SECTION 3: When elections are held by ballot, the Chairman shall appoint three tellers who shall make a tabulation of the ballots and report to the meeting the result of the votes cast. The members receiving the highest number of votes for the Governing Council shall be declared elected, and the tellers will so certify in writing to the Secretary of the Institute, giving the number of ballots cast for each nominee. Any tie votes shall be decided by a majority vote of the members of the Governing Council, that is, the newly elected members and those continuing in office.

SECTION 4: The Governing Council, by majority vote, shall elect a member to fill any vacancy occurring between annual meetings, and each person so elected shall hold office until the vacancy is regularly filled at the next annual meeting.

ARTICLE XI

Officers

SECTION 1: The Governing Council shall elect from among its own number a President; and a Vice President from each of the eight (8) regions created by the Governing Council (subject to the right of the Governing Council to make changes therein at any time, such regions are hereby designated with boundaries and identification coincident with the regions already created by the Board of Directors of the National Association of Real Estate Boards). These officers shall also be respectively President and Vice Presidents of The Institute of Real Estate Management; and their duties shall be such as usually pertain to their respective offices.

The Vice Presidents shall, in the order of their nomination for the then current tenure of office, perform the duties of the President in the event of his absence or disability. They shall supervise the work of the Institute in their respective regions and act as the representative to the President in such matters as may be assigned to them.

In case of a vacancy in the office of any Vice President, it shall be filled by the Governing Council for the unexpired term from the region in which the vacancy occurs, and such Vice President shall be regarded as the last nominee under the provisions of the second paragraph of this Section.

SECTION 2: The President shall, by virtue of this office, become a member of the Board of Directors of the National Association of Real Estate Boards.

SECTION 3: The Secretary and Treasurer of the National Association of Real Estate Boards shall be the Secretary and Treasurer respectively of The Institute of Real Estate Management. All funds of the Institute, including any special funds contributed to it by its members or others, shall be deposited in the treasury of the National Association of Real Estate Boards by the Treasurer and shall be segregated for the sole use of this Institute. The Treasurer shall make due accounting to the Governing Council at least once each year.

ARTICLE XII

Fiscal and Elective Years

SECTION 1: The fiscal and elective years of The Institute of Real Estate Management shall conform to those of the National Association of Real Estate Boards.

ARTICLE XIII

Standing Committees

SECTION 1: The standing committees shall be as follows: Admissions Committee, Membership Committee, Ethics and Disciplinary Committee, Education Committee, Experience Exchange Committee, By-Laws Committee, and Public Relations Committee.

ARTICLE XIV

Special Committees

SECTION 1: Special Committees may be appointed by the President, subject to the approval of the Governing Council, to perform such services as may be assigned to them.

ARTICLE XV

Resignations, Suspensions, Expulsions, and Reinstatements

SECTION 1: All resignations of members shall be made to the Governing Council in writing and may be accepted by it on a majority vote subject to the payment of all outstanding dues and obligations of the resigning member.

SECTION 2: Any member may be expelled for professional misconduct by a four fifths vote of the Governing Council. No member shall be disciplined or expelled, however, without having had an opportunity to answer the complaint made against him either in person or by filing a written brief.

SECTION 3: Any member who fails to pay his dues or other indebtedness within ninety days after the same becomes due may at the end of such time be suspended by a majority vote of the Governing Council and shall then no longer be in good standing. Immediately upon suspension, all rights and benefits of membership shall terminate until the delinquency is satisfied. If any indebtedness remains unpaid for six months after the same becomes due, the member shall automatically be dropped from the rolls unless the time of payment shall have been extended by the Governing Council.

SECTION 4: Any member dropped or expelled from membership for any cause shall be reinstated to good standing only by a four fifths vote of the entire Governing Council, and then only upon written application by the candidate for reinstatement approved by the Admissions Committee.

SECTION 5: Any member who resigns, is suspended, or is dropped from the roll of membership shall immediately return his certificate, his emblem, or any other mark of identity as a member of The Institute of Real Estate Management. Upon failure to return these evidences of membership upon demand by the Governing Council, the President or Governing Council may cause notice of such expulsion to be given publicity through paid advertising or news items in the papers local to the member's business address and also cause to be brought any legal action necessary to acquire these marks of identification which are the property of the Institute.

ARTICLE XVI

Local Chapters

SECTION 1: For the purposes of affording its members better opportunities for close cooperation, discussion of various phases of real estate management, and local control, the Governing Council of The Institute of Real Estate Management may, under such rules and regulations as it may adopt, establish such local chapters as may be deemed advisable or necessary. These local chapters shall be known as "Chapters of The Institute of Real Estate Management," and each shall be given an identifying number in the order of its establishment.

SECTION 2: Upon the application of not less than five Individual Members in good standing, the Governing Council may grant authority for the establishment of local chapters with limits defined geographically by the Governing Council, such authority to continue at the pleasure of the Governing Council and to be revocable by the Governing Council under such rules as to quorum and vote as are elsewhere set forth for the expulsion of a member. Each such local chapter shall always have not less than five resident members in order to maintain the continuity of its existence.

SECTION 3: The Governing Council may, when such action is deemed expedient or desirable, redefine or divide the territorial jurisdiction of any local chapter for the purpose of establishing an additional local chapter, providing, however, that there shall in no case be more than one local chapter within the corporate limits of any one city.

SECTION 4: These chapters shall have the right to elect a chairman, other officers, and committees and to assess dues necessary for their proper functioning. The actions of such local chapters shall at all times be subject to the approval of the Governing Council of The Institute of Real Estate Management and shall at all times remain subject to the Constitution and By-Laws of the Institute. Local chapters may not speak for The Institute of Real Estate Management without prior specific authority from the Governing Council.

ARTICLE XVII

Meetings and Quorums

SECTION 1: The annual meeting of The Institute of Real Estate Management shall be held at the same time and place as the annual meeting of the National Association of Real Estate Boards. Other meetings may be called by the Governing Council from time to time.

SECTION 2: All meetings of The Institute of Real Estate Management shall be open to all members of the National Association of Real Estate Boards, provided, however, that only Individual Members of The Institute of Real Estate Management shall be entitled to the privilege of the floor, to participate in the discussions, to vote, or to hold office.

SECTION 3: Those Individual Members present after due notice of not less than two weeks prior thereto shall constitute a quorum for any annual meeting or for any meeting of the Governing Council.

SECTION 4: A quorum for any special meeting shall consist of 60 per cent of the Individual Members in good standing. All Individual Members are to be notified by mail sent out at least two weeks prior to the date of any special meeting of any decisions to be made at the meeting. Any decisions made at a special meeting without such prior notice shall not be final until confirmed at the next annual meeting or at a subsequent special meeting following due notice of the action to be considered.

ARTICLE XVIII

Limitation of Liability

SECTION 1: The Institute of Real Estate Management shall not incur and the National Association shall not assume any liability for expenditures or commitments of The Institute of Real Estate Management unless such expenditures or commitments shall first have been reflected in a budget duly approved by the Board of Directors of the National Association of Real Estate Boards.

ARTICLE XIX

Amendments

SECTION 1: These By-Laws may be amended by the Governing Council of The Institute of Real Estate Management by a two thirds vote of the members present, provided thirty days' notice in advance shall have been given to all Individual Members of the intention to amend, together with a written copy of the proposed amendments, and provided further that such amendments be approved by the Board of Directors of the National Association of Real Estate Boards before they become effective.

* * *

1938 OFFICERS OF
THE INSTITUTE OF REAL ESTATE MANAGEMENT

of the

National Association of Real Estate Boards

JAMES C. DOWNS, JR.....*President*
38 South Dearborn Street, Chicago, Illinois

WILLIAM I. MIRKIL.....*Vice President, Central Atlantic Region*
1500 Walnut Street, Philadelphia Pennsylvania

JAY L. HEARIN.....*Vice President, Southeast Region*
Citrus Exchange Building, Tampa Florida

CARLTON SCHULTZ.....*Vice President, Great Lakes Region*
The B. F. Keith Building, Cleveland, Ohio

E. R. PRICE.....*Vice President, North Central Region*
131 South Seventh Street, Minneapolis, Minnesota

DELBERT S. WENZLICK.....*Vice President, South Central Region*
415 North Eighth Street, St. Louis, Missouri

ROBERT C. NORDBLOM.....*Vice President, New England Region*
18 Oliver Street, Boston, Massachusetts

HERBERT U. NELSON.....*Secretary*
22 West Monroe Street, Chicago, Illinois

MARK LEVY.....*Treasurer*
22 West Monroe Street, Chicago, Illinois

HARRY GRANT ATKINSON.....*Director of Activities*
22 West Monroe Street, Chicago, Illinois

Governing Council

Term Expiring December 31, 1940

James C. Downs, Jr., Chicago, Illinois
Clement E. Merowit, New York City
B. O. Miller, Los Angeles, California
Robert C. Nordblom, Boston, Massachusetts
Harry A. Taylor, East Orange, New Jersey

Term Expiring December 31, 1939

Robert A. Cline, Cincinnati, Ohio
Jay L. Hearin, Tampa, Florida
J. W. Markeim, Camden, New Jersey
E. R. Price, Minneapolis, Minnesota
Delbert S. Wenzlick, St. Louis, Missouri

Term Expiring December 31, 1938

Leo V. DuBois, Cincinnati, Ohio
Edward G. Hacker, Lansing, Michigan
William I. Mirkil, Philadelphia, Pennsylvania
Carlton Schultz, Cleveland, Ohio

Representing Board of Directors, N. A. R. E. B.

Leonard P. Reaume, Detroit, Michigan

Committees

Admissions Committee

Harry A. Taylor, East Orange, N. J., *Chairman*
Arthur Bohnen, Chicago, Ill.
Robert A. Cline, Cincinnati, O.
Julian W. Cooper, Tampa, Fla.
J. W. Markeim, Camden, N. J.
B. O. Miller, Los Angeles, Calif.
Robert C. Nordblom, Boston, Mass.

By-Laws Committee

L. V. DuBois, Cincinnati, O., *Chairman*
H. M. Sparling, Wichita, Kan.
James R. Thorpe, Minneapolis, Minn.

Ethics and Discipline Committee

Edward G. Hacker, Lansing, Mich., *Chairman*
Glyndon Priestman, Germantown, Penn.
Delbert S. Wenzlick, St. Louis, Mo.

Experience Exchange Committee

E. R. Price, Minneapolis, Minn., *Chairman*
William H. Gorsline, Jr., Rochester, N. Y.
Carlton Schultz, Cleveland, O.

Membership Committee

Jay L. Hearin, Tampa, Fla., *Chairman*
William I. Mirkil, Philadelphia, Penn.
Robert C. Nordblom, Boston, Mass.
E. R. Price, Minneapolis, Minn.
Carlton Schultz, Cleveland, O.
Delbert S. Wenzlick, St. Louis, Mo.

Public Relations Committee

Henry T. Holsman, Chicago, Ill., *Chairman*
Herman A. Acker, New York City
Leonard P. Reaume, Detroit, Mich.

Organization Membership Roster

(As of February 1, 1938)

Organization Members of The Institute of Real Estate Management:

1. Are actively and reputably engaged, with a good record, in the business of real estate management.
2. Segregate clients' funds in a separate bank account, or accounts, so that they are never commingled with funds belonging to the management firm.
3. Take no commissions, rebates, discounts, or other benefits, in connection with the management of property, on the purchase of supplies, equipment, repairs, or other services, except with the knowledge and approval of the owners concerned. Itemize any such items clearly on the owner's monthly statement.
4. Maintain Fidelity Bonds on all officers and all employees handling or accounting for clients' funds.
5. Make no charges to clients' accounts until bills have actually been paid.
6. Are members of Member Boards, or Individual Members, of the National Association of Real Estate boards.

CALIFORNIA

Los Angeles
W. I. Hollingsworth & Co., B. O. Miller.....606 S. Hill St.

COLORADO

Denver
Morrison and Morrison, Inc., George R. Morrison.....1650 Broadway

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